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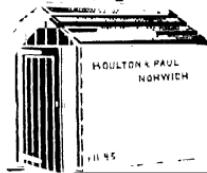
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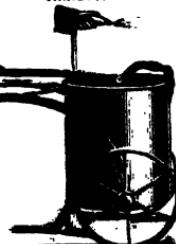


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**I. UPSCOTT GILL, LONDON AND COUNTY PRINTING WORKS,
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PREFACE.

THAT Open-air Gardening is a hobby of "the million," or of its great popularity as compared with the necessarily more expensive under-glass gardening, there can hardly be two opinions. Such facts are borne out each week in the columns of the Horticultural Press, as well as in the more stable literature of the day. Nor is it only the Floral section that has widespread interest. The culture of Fruit and of Vegetables is quite as interesting, quite as easy, and economically more important. Even, too, if Fruit and Vegetables cannot be grown by all for profit, they can at least be grown for pleasure and health; nevertheless, it is the exception rather than the rule to find them adequately treated in those works upon General Gardening accessible to the many.

It is with a view of providing a practical book at a popular price that will cover the ground suggested by the title, and in deference to the oft-expressed wishes of a large number of persons for such a book, that the Publisher has issued this abridgment of "The Book of Gardening." There is no need to speak as to its scope: that may be found by referring to the Contents. The reception accorded the larger work, alike at the hands of the Press and the public, encourages the Publisher in hoping that this offshoot from the parent stem will meet the wants of a very large section of the Garden-loving public.

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OPEN-AIR GARDENING.

CHAPTER I.

FLORISTS' FLOWERS.

The Auricula—The Carnation and Picotee—The Garden Pink—The Dahlia—The Pansy—The Viola or Tufted Pansy—The Garden Tulip—The Gladiolus—The Ranunculus—The Polyanthus—The Hollyhock—Additional Species and Varieties.

By common consent the favourite plants of our gardens have been designated "Florists' Flowers," and for very many years they have been known as such. The most beautiful, and of highest value amongst them, are the Rose, Chrysanthemum, Carnation, Pink, Auricula, Pansy, Viola, Tulip, Dahlia, Hollyhock, Ranunculus, Polyanthus, and Gladiolus. Some, like the Viola, are of modern conception; others, like the Carnation, Auricula, Tulip, &c., have graced our gardens for over three-hundred years. By careful selection and cross-fertilisation all of them have attained a high standard of excellence. The work of improvement has been going on for many generations of amateurs. For instance, we have a very definite account of the Carnation in "The Historie of Plants," published by John Gerard, in 1598. This worthy florist cultivated the Clove and the Great Double Carnation, and he informs us that the first yellow Carnation was procured from Poland, and grown in his own garden. Doubtless, he would speedily raise new varieties from seed, and the yellow Carnation has been going through a course of improvement since that time.

In these days the florist has a standard of excellence in his mind, and by cross-fertilising the best varieties, and by careful attention to minute details, he effects some improvement in the colour or in the form of the flowers of his favourites. Some excellent work has been done by men in comparatively humble

walks of life, such as Mr. Benjamin Simonite, of Sheffield, a working cutler, who has done a good work amongst the Auriculas and Carnations, as his father also did amongst the Pinks.

The first decided improvement in the Hollyhock was made by Mr. Charles Baron, a Saffron Walden shoemaker. What splendid work was done, too, by the Lancashire weavers in the old days! They improved the Auricula, the Carnation, the Pink, the Tulip, the Polyanthus, and other beautiful garden flowers, and their work has come down to us in the Lancashire Hero Auricula of Robert Lancashire, and the Smiling Beauty of James Heap.

When a very high standard of excellence has been reached, progress is necessarily slower, but it still goes on, and if but little progress seems to be made season by season, the work shows itself in the course of years. The cultivation of florists' flowers is not well understood, even amongst gardeners; but it is a fact that every section of them may be successfully produced with very little labour indeed. The amateur has a love for his favourite flowers, and the time spent in attending to them is a pleasure to him. He soon finds out their requirements, and gives them the attention they need at the right time. He is always thinking about them, and daily, at a certain hour, they are looked over, water is given when needed, decayed leaves are removed, and if plants require repotting, they are done before it is too late. Insect pests are noticed at once by the attentive observer, and they must be dealt with before they do mischief.

There are so many details required in the various classes of work, that some would-be florists may be inclined to remark, "That if the things require so much attention, it may be better not to grow them at all." In answer to that objection, I can only say it is the same with orchids and all other choice plants: the amateur or fancier must have a real love for his flowers, and when this is in evidence, attention bestowed upon them is a pleasure, and toil and trouble are not thought of.

Another source of pleasurable excitement is found in the raising of seedling varieties. My friend Ben Simonite says a man is not worthy of the name of florist if he does nothing in the way of seedling-raising to improve the flowers he cultivates. Cultural directions are of little use to those who do not take sufficient interest in their plants to follow them up.

All florists' flowers are not included here. Several are of sufficient importance to have a chapter devoted to themselves—

the Rose, to go no further—while the remainder will be dealt with in their respective sections.

The Auricula (*Primula Auricula*).

Amongst the choicest of florists' flowers must undoubtedly be accounted the Auricula, which has been long under cultivation in English gardens—three-hundred years at least. During that period it has seen many changes. In those days of long ago it was designated in some districts "Bear's-ears," in others "Sow's-ears"; while in Scotland, the cottagers know it as the "Dusty Miller," the leaves being in many instances so thickly coated with a mealy substance (farina) as to appear quite white. These Auriculas are quite hardy in Scottish gardens, and the refined Auricula of the florist will stand the winter out-of-doors. This I have proved; but the edged flowers are worthless when treated in this way, owing to their delicate tints and the white farina on leaf and flower being so easily injured by rain-drops. The Wild Auricula is freely distributed in the mountainous districts of Switzerland, Austria, Syria, and the Caucasus. Under natural conditions the plants are found, as regards the foliage, in two states—some heavily powdered with farina, and others quite destitute of it; and so we find them in the garden varieties.

SHOW AURICULAS.—This section has long been under the careful hand of the florists, and the flowers have been brought through their fostering care to the highest standard of excellence. Fanciers divide the Show section into four classes—Green-Edged, Grey-Edged, White-Edged, and Selfs—and the usual method is to begin with the Green-Edged. In describing fully the properties of this section, I would remark that in all the other classes there exist varieties with green and powdered foliage, but the foliage of all the Green-Edged varieties is quite destitute of farina, or meal. The Auricula should possess a stout flower-stem—one that holds the truss erect above the foliage. The fancier is quite satisfied with seven to nine pips. A strong plant will produce as many as twenty pips, or more; but where there are so many it is necessary to thin a number of them out, otherwise they will not fully develop, and the central flowers, or "pips," of the truss will usually be the most imperfect.

Green-Edged.—In this class, the edge of the corolla should be quite green and free from farina, but in most of the so-called Green Edges there are usually a few dots of meal, though they

must be so thinly placed, that the edge presents to the eye a green colour. Inside the green margin is the body-colour, and black is most esteemed, although, when closely scrutinised, there is a tinge of purple in it. There are other shades of colour, such as maroon, violet, and plum. The colour strikes or flashes into the green edge, and is never found in a compact ring. Sometimes, the ground, or body-colour, strikes quite through to the edge, which is a great fault. The inner edge of the body-colour, where it touches on the white centre, should be circular, but it is sometimes slightly angular, and what is worse, a scalloped edge is formed. The centre ought to be white, formed by a dense coating of farina, and the eye, or centre of the flower, should be bright yellow, and filled with the anthers. The stigma should be out of sight within the tube: if the stigmatic part of the flower protrudes from the eye, and the anthers are placed lower down, it is termed "pin-eyed," and no florist would own such a flower. Any deviation from the properties I have given above is a fault, and few of the older Green-Edged varieties are faultless. One of the most esteemed of them, Freedom (Booth), has an angular paste, which is the one fault of this fine flower. Admiral Napier (Campbell) is a fairly good Green-Edge, but is also spoilt by an angular paste. Rev. F. D. Horner (Simonite) is perhaps the best Green-Edge we have at present, but the slightly angular paste is its one serious fault. Another fault is a pale-coloured tube, and amongst the older Green-Edged varieties this is possessed by Apollo (Beeston). Prince of Greens (Trail) may be ranked as a modern variety, although it was raised some forty years ago by Mr. Trail, of Aberlady, N.B. It has the most correct green edge of any; but the pale-coloured tube, which takes on an inky tinge as the flowers fade, quite spoils it. There is still room for improvement in this section.

Grey-Edged varieties come next in order, and it may safely be asserted that this class contains the finest edged Auriculas. The edge is termed "grey," owing to its being moderately powdered with farina over the green, but in no other respect does it differ from the Green-Edged varieties. Perhaps the most perfect of all Show Auriculas is George Lightbody (Headly). In all points it is of surpassing excellence. The truss is admirable; the pips, or corolla, are in all points excellent, and when shown with seven pips, in the best condition, from a young plant, this variety usually wins premium at the leading exhibitions. Lancashire Hero, raised by an old Lancashire weaver (Mr. Robert

Lancashire), is inferior to the preceding. It has not such a perfect grey edge; in fact, the farina is so thinly scattered on the edge, that the variety may sometimes be exhibited as a Green-Edged.

White-Edged.—This class is distinguished from the Grey by the greater density of the farina on the margin; it is so thickly powdered as in some instances to be almost as white as the centre. In recent years a good many fine varieties have been added to this class. Perhaps the most typical, when seen at its best, is Acme (Read); Conservative (Douglas) is a flower well up in all the properties, and Mrs. Dodwell (Woodhead) is also a first-class White-Edge. A fault in the section, and one from which the Grey-Edged varieties are not exempt, is the body or ground-colour being less or more dusted with powder. A pretty old variety, Catherina (Summerscales), has this fault, as also has Lee's Earl Grosvenor.

Selfs.—In this class there is a margin of yellow, bluish-violet, violet, purplish-maroon, and maroon. The additions to it in recent years have been numerous, and have quite superseded the older varieties. The best are: Heroine (Horner), purplish-maroon; Black Bess (Woodhead), maroon; and Mrs. Potts (Barlow), a lovely violet, whose fault is a long, weak flower-stem.

ALPINE AURICULAS.—The characteristics of this section are that the flowers and leaves are destitute of farina; the centre, instead of being white, is yellow- or cream-coloured; and the edge of one colour is darker at the centre, and shades to a paler tint at the margin. The prettiest Alpine Auriculas are those with a deep yellow centre, and a maroon-shaded edge. They are, perhaps, not hardier than the Show Auriculas, but the flowers are not much injured by rains. Auriculas of this section are grown, and sometimes exhibited, with unshaded edges; but they have a heavy, dead appearance, and cannot successfully compete with those having a shaded edge. The prevailing colours of the Alpine Auricula are maroon, reddish-maroon, coppery-yellow, mauve, and purplish.

PROPAGATION.—This is effected by seed and by offsets. The seed should be sown as soon as it is ripe—in July, a season of the year when it readily vegetates. It may be sown in small seed-pans or in flower-pots, and as soon as the first leaf is formed after the seed-leaves, the young plants should be pricked out—about a dozen of them in a small sixty-sized pot. At first the growth is rather slow, and the plants will take from twelve to eighteen months to attain their full size. They will

require after a time to be repotted—three plants in a small sixty, and the next time one in a flower-pot the same size. They will flower in 4in. flower-pots the second season after sowing the seed. Of course, the Auricula fancier, after having obtained a stock of choice varieties, would save seed from cross-fertilising the best of them. This is easily done by cutting off

the anthers with a pair of sharp-pointed scissors, before the pollen is scattered. The plant should be held upside down when doing this, so that the pollen-cases may fall on the ground instead of into the tube. With a fine camel-hair brush the pollen should be conveyed to the stigma of the flowers intended to bear seed. It is needless to add that only the best varieties in each class should be used alike as seed- and pollen-bearers. Above all, the classes should not be intermixed. The Green-Edged

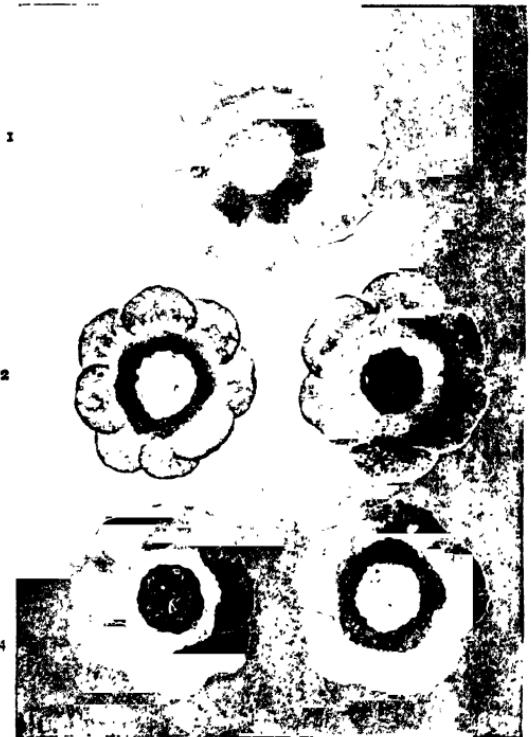


FIG. 1.—SELECT SHOW AURICULAS.

1. SNITHERFIELD GREEN, GREEN EDGE.	3. MARMION, GREY EDGE.
2. MISS PRIM, WHITE EDGE.	4. GEORGE LIGHTBODY, GREY EDGE.
5. REV. F. D. HORNER, GREEN EDGE.	

should be crossed with another variety having a green edge. The same remark applies to the Alpine Auriculas. In crossing, the yellow-centred kinds should be kept together, as also should the white or cream.

Propagation by offsets is the way to obtain a stock of named varieties. Such offsets are produced very freely by some

varieties, and very slowly by others. I have grown an old plant for six years without obtaining an offset, while others will produce as many as from six to a dozen in one year; but from three to six are as many as one might expect. I use what the trade term "thumb" pots for the offsets. In the case of very small offsets, three or four may be planted in one pot, though in some cases one or two will be better. They become established most readily in close hand-lights in a shady place. When the plants begin to grow, admit more air, and pot off when necessary. The old growers used to have specially-constructed frames for their plants, and mysteriously compounded soils in which to plant them. In a word, the whole art and culture of the Auricula was supposed to be known only to the initiated. The day has long gone by for the public to be gulled with floral jargon, and it is now well known that the Auricula is one of the easiest of all plants to grow when its simple requirements are understood. A good compost for Auriculas is made with four parts of decayed fibrous loam, one part of decayed cow-manure, and one part of leaf-mould. I never use artificial manure in Auricula potting material. The manure must be free from grubs and worms.

Auriculas can be grown and flowered to perfection in ordinary garden-frames; these should be placed on the north side of a wall or fence, as the Auricula is very impatient of bright sunshine, especially during the summer months; but the plants like an abundance of air. The lights should therefore be removed whenever the weather is favourable, and by this method well-developed plants and compact trusses will be obtained. There is in the diversity of foliage, as well as in the quaint and marvellous beauty of the flowers, a never-failing source of delight to the fancier during the spring months when the trusses are in course of development.

The Auricula is one of the oldest flowers that has been specially cultivated for exhibition purposes, and many of the fanciers of the present day, I fear, would scarcely care to cultivate the Auricula unless they could exhibit it. In order to ensure having plants in good condition and in full blossom on the right day, heated houses are built in which to flower them, and the heating apparatus is always used to keep out the frost. As soon as the first pips on a truss open, the plants must be shaded from bright sunshine. A dry atmosphere is injurious to them, but it must not be over-moist; a medium pleasant atmosphere is best. Great care must be exercised in conveying the plants to exhibitions, as the least touch upon the thickly-placed farina on flower

and foliage is injurious. The fancier should also place some nice green moss on the surface of the soil in the pots. The truss should be supported by means of a neat stick, and when a careful arrangement is made, a very pretty effect is produced.

SHOW VARIETIES.—A prize group is shown at Fig. 1, and the following is a list of the six best show varieties at present in cultivation in each class of this section :

Green-Edged.—Rev. F. D. Horner (Simonite); Abbé Liszt (Douglas); Prince of Greens (Trail); Mrs. Henwood (Barlow); Freedom (Booth); and Shirley Hibberd (Simonite).

Grey-Edged.—George Lightbody (Headly); Lancashire Hero (Lancashire); Marmion (Douglas); Richard Headly (Lightbody);

Frank (Simonite); and Mabel (Douglas).

White-Edged.—Acme (Read); Conservative (Douglas); John Simonite (Walker); Mrs. Dodwell (Woodhead); Smiling Beauty (Heap); and Ne Plus Ultra (Smith).

Selfs.—Black Bess (Woodhead); Heroine (Horner); Mrs. Potts (Barlow); Sapphire (Horner); Buttercup (Horner); and Ruby (Simonite).

Alike in the Show and the Alpine sections, some very fine varieties have been introduced within recent years; but it takes a long time before they can be sent out after



FIG. 2.—ALPINE AURICULA APOLLO.

being exhibited. It is best therefore to enumerate those only that can be obtained by purchase through the usual trade channels. Two excellent and very promising new varieties in the Alpine section are Apollo (Douglas) (Fig. 2) and Melaine (Douglas) (Fig. 3).

ALPINE AURICULAS.—The following are the best twelve: Dean Hole (Douglas); Diadem (Gorton); Duke of York; Edith (Turner); Firefly (Douglas); Minstrel (Douglas); Defiance (Turner); Mrs. Martin (Henwood); Mrs. Harry Turner (Turner); Miss Moon



FIG. 3.—ALPINE AURICULA MELAINE.

(Douglas); Nellie Hibberd (Douglas); Toujours Gaie (Douglas); and Perfection (Douglas).

PESTS.—There is one disease in connection with Auriculas which ought to be mentioned—the “rot”; this attacks the main root at its base. The old varieties are most liable to be attacked, and it is necessary to examine the base of the main roots at the time of repotting. Sometimes they will be a mass of decay, although the plant itself may look right enough. All the decayed portions must be cut away with a sharp knife, and some dry quicklime pressed firmly into the cut portion. Water must be very carefully applied to the roots until the plants are well established again.

A species of woolly aphis (*Trama auricula*) is a pest recently noted as attacking the roots of the Auricula. The insects cluster around the stem above and below ground, but do not seem to do so much mischief as one would think. I take a small brush, dip it in dry tobacco-powder, and brush the powder well in amongst them. When repotting the plants, remove any of the aphides found amongst the roots, for they will get down as far as the drainage. The ordinary greenfly is also troublesome, but this is destroyed by fumigating, or by dusting with tobacco-powder if the plants are not in a close greenhouse or frame.

The Carnation and Picotee (*Dianthus Caryophyllus*).

During the last quarter of a century a great advance has been made with the Carnation. At that time Carnation fanciers thought most of Flakes, Bizarres, and White-Ground Picotees. The Malmaison Carnations were few, the old Pink and Blush being almost exclusively cultivated. Soon, however, a great improvement took place in the Yellow-Ground Picotee, a fine variety, Prince of Orange, being used as the seed-bearer; but most of the above were grown in flower-pots, and cultivated under glass. By and by amateurs asked for a hardier type of Carnation for border culture, and when a want is felt the supply is not long in coming. There are now in cultivation a very large number of Border Carnations, and the names of the best varieties will be found under the "Selfs" and "Fancies." New varieties of Malmaison Carnations have also been introduced, many of them of rich and perfectly distinct colours. The Yellow-Ground Picotees have been improved quite as much as the Selfs and Fancies during the last decade. The Flakes, Bizarres, and White-Ground Picotees seem to have attained to perfection, little or no improvement having been made during the last quarter of a century.

The Carnation, which also includes the Picotee, is one of the good, old-fashioned flowers that never ceases to please. The old authors, like Gerard and Parkinson, wrote about them three-hundred years ago. The myriad-minded magician, Shakespeare, did not omit the Carnation from his plays. What florist does not admire the amusing dialogue between Polixenes and Perdita in the "Winter's Tale."

Perdita says :

"Sir, the year growing ancient,—

Not yet on summer's death, nor on the birth



FIG. 4.—CARNATIONS.

A, FLAKE CARNATION. B, PICOTEE.

Of trembling winter,—the fairest flowers o' the season
Are our carnations, and streak'd gillyflowers,
Which some call Nature's bastards."

And so we love our Carnations for old-time associations as we do for their sweetness and surpassing beauty. There is no need to write a historical retrospect on these flowers, the fairest and sweetest in the garden; but they are now divided into so many classes and sections that the tyro in their culture is puzzled to comprehend the arrangement of the fancier.

CLASSIFICATION.—For garden and exhibition purposes, Carnations are divided into the following classes:

Scarlet Bizarres have the petals striped and flaked with scarlet and maroon on a white ground. Crimson Bizarres have crimson and purple on a white ground. Pink and Purple Bizarres have those colours on a white ground. Purple Flakes have purple flakes and stripes on white. There are also Scarlet and Rose Flakes (Fig. 4A). Then there are Selfs. These, of course, have the flowers all of one colour. Fancies include all the varieties that cannot be admitted in any of the other classes, such as those with a yellow- or a white-ground, as well as those mottled, flaked, or spotted with various colours.

Picotees (Fig. 4B) are really Carnations, and are comprised in both the White- and Yellow-Ground sections. They have a continuous edge of colour, wide or narrow, the rest of the flower being white or yellow, and the fewer stripes, spots, or bars, on the petals, the more are they esteemed. The Yellow-Ground Picotees have not yet attained to such a high standard of excellence as the White-Ground. The latter for show and garden purposes are divided into six classes, according to the colour or width of the margin, thus: light and heavy red edges; light and heavy purple edges; light and heavy rose and scarlet edges.

CULTURE.—The Carnation is propagated by seed, layers, and slips, or cuttings. The first method is employed to obtain new varieties. Whether cross-fertilised or not, the Carnation is certain to vary very considerably from seed. Many of the seedlings will be as good as, or better than, the parent plant, but many more of them will not be so good, and even if the seed is obtained from the finest double flowers, there will still be a number of single-flowered varieties among them—about ten per cent. These varieties with single flowers are pretty enough, but very fugacious, evidently because they fertilise so readily. There is much pleasure in

anticipating the flowering of the seedlings, especially if the flowers from which the seed was obtained had been cross-fertilised. By far the best results may be expected from seed obtained by carefully transferring the pollen of one good variety to the stigmatic part of the flower of another, but, in doing this, it is well not to mix the classes. Selfs should be cross-fertilised with Selfs, Fancies with Fancies, &c.

The seed should be sown in the spring, in a frame or greenhouse, and the plants treated much like small, half-hardy annuals, as Stocks and Asters. The seedlings should be pricked out about 3in. asunder. They should be finally transplanted in the summer and autumn on to good, deep, well-enriched garden soil, allowing 15in. between the plants. Such seedlings will produce from about one hundred to two hundred blossoms on each plant. Nearly all the Border Carnations are propagated by layering. This is done in the autumn, or as soon as the flowers are past. Some fine soil is prepared, consisting of good loam, leaf-mould, and sand in about equal portions, while some of the earth should be removed from the base of the plant. The lower leaves should be stripped from the growths clustering round the base of the flower-stems. These growths are termed the "grass." An incision with a sharp knife should next be made into the stem at a joint, which should be cut through, and the layer pegged firmly into the prepared soil. As many as a dozen of these layers may be found at the base of one plant. They will be ready to be severed from the plants six weeks after layering, and they may be planted out in the open garden, or potted up into small pots to be kept in frames through the winter.

Cuttings, or slips, may also be taken from Border Carnations, and be struck in close hand-lights or garden-frames with just a little bottom-heat. Only such growths as are too high up the stem to be layered should be treated in this way. Tree or Perpetual-Flowering Carnations are generally propagated by slips, as being the most convenient.

The Carnation is a perfectly hardy plant, and succeeds very well indeed in the open borders of the flower-garden, or in beds specially prepared for them. When the time arrives for taking off the layers, the ground in the flower-garden should be in a condition to receive them. Some amateurs do not think it is necessary to prepare the soil until the plants are ready to go out; but to do the Carnation well, the ground ought to be freely exposed to sun and air for at least six weeks previously; the

longer the better, providing the soil is in a friable condition. Plant firmly, and put a thin layer of decayed manure on the surface of the ground amongst the plants: they form roots more readily when this is done. If the plants are set out in beds, they ought to be about 15in. asunder; if in borders, three plants should be arranged in a triangular form, about 6in. apart; in this way an imposing head of blossom is obtained. It is well to put up a number of layers in small pots in case any of the plants should die during the winter.

The time of planting is of some importance, and on this head experts differ. Some say plant as soon as the layers are ready: others advocate planting out as late as November. I have done it in September, October, and November, and could not observe any difference. In fact, the best lot of plants I ever had was put out the second week in November. The weather was favourable at the time of planting, and for two or three weeks after.

All exhibitors of Carnations, and those who wish to enjoy them in perfection, grow a full collection in flower-pots. The layers are inserted when ready in what the trade term "sixties," two plants in a pot, and they are wintered in garden-frames. They are placed fairly close to the glass, in order that they may have the full benefit of light and air. In some districts damp is troublesome, doing some damage to the leaves by what is termed "spot," but free ventilation will usually prevent its appearance. The work during winter consists in keeping the plants clean by removing dead and decaying leaves, stirring the soil on the surface, and by paying careful attention to the watering. In March they must be transferred to their flowering-pots. Two plants should be placed in a pot 8in. in diameter, or three in one 9in. The pots must be drained well, and the compost packed in firmly around the plants. In the process of transferring the plants from the small to the large pots, care must be taken not to disturb the roots more than is absolutely necessary. As the plants are repotted, they should be placed again into garden-frames until they are established, when the best way to treat them is to stand them out in the open air on a hard bottom of ashes. When the weather is mild, and the potting is not done until after the middle of March, it may be as well to stand them out-of-doors at once, as in the spring the frames are often required for half-hardy and tender plants. The flower-sticks ought to be placed to the plants very soon after they go

out-of-doors, as high winds may snap off valuable plants close to the surface of the ground.

Careful attention must be given to watering all through the season, and as soon as the flower-buds show colour the plants must be removed to the greenhouse, where they are to flower. Green-fly and thrips between them will disfigure both leaves and flowers if not dealt with at the outset. Fumigating must therefore be resorted to. To prevent the "grass" from drawing up weakly, air must be freely given, and when the flowers open they must be shaded from bright sunshine to preserve their beauty as long as possible. About the end of July, layering may be commenced, and it will be better to place the plants out-of-doors, as the layers become drawn if the plants are kept under glass. Those plants growing in the open borders should be layered, of course, where they are. To do this scratch some of the ordinary garden mould away from the base of the plants, replacing it with the compost already recommended.

Tree Carnations require rather different treatment. As the growths are mostly found up the main stems, they cannot very readily be layered, and are propagated by slips from the main stems of the plants. These strike freely in hot-beds, or early in the season in a forcing-house with a little bottom-heat. The temperature of the house should be about 55deg. If possible, the bottom-heat should be kept about 8odeg. to 9odeg. The slips will readily form roots in sixty-sized pots; when the young plants are established, they should be potted singly, and gradually inured to greenhouse culture. From May until the end of September Tree Carnations do best out-of-doors. The best potting soil for Carnations is three parts of good loam, one part of decayed manure, and one part of leaf-mould: sand to be added to lighten heavy soils. Mortar rubbish, broken up and run through a $\frac{1}{2}$ in. sieve, is also excellent to mix with the compost.

VARIETIES.—The following is a list of the very best varieties now in cultivation, arranged in their classes:

Scarlet Bizarres.—Robert Houlgrave, Dr. Hogg, Othello, Admiral Curzon, Joseph Crossland, and Robert Lord.

Crimson Bizarres.—J. S. Hedderley, J. D. Hextall, Patriot, Master Fred, Phoebe, and Edward Rowan.

Pink and Purple Bizarres.—William Skirving, Edith Annie, Arline, Sarah Payne, Harmony, and Autocrat.

Purple Flakes.—James Douglas, Gordon Lewis, Earl Stamford, Charles Henwood, George Melville, and Mayor of Nottingham

Scarlet Flakes.—Sportsman, Guardsman, Matador, Miss Constance Grahame, John Wormald, and Alisemond.

Rose Flakes.—Thalia, Lady Mary Currie, Rob Roy, Mrs. Rowan, John Keet, and Tim Bobbin.

Selfs.—Mrs. Eric Hambro, Lady Hindlip, Her Grace, Dick Donovan, Silver Strand, Mrs. McRae, Cecilia, Queen of Scots,



FIG. 5.—CARNATION CZARINA.

Garville Gem, Endymion, Mrs. Colby Sharpen, Mrs. James Douglas, Nox, Helmsman, Barras, Bendigo, Germania, and Miss Maud Sullivan.

Fancies.—Czarina (Fig. 5), Brodick, George Cruickshank, The Czar, Mogul, Artemis, Perseus, Cardinal Wolsey, Monarch, Lady Jane Grey, Hidalgo, and Pelegia.

Picotees White Ground, Light and Heavy Red-Edged.—Brunette, Emily, John Smith, Mrs. Gorton, Princess of Wales, Mary D. Anstiss, Charlotte Brontë, Ganymede, Mrs. Bower, Norman Carr, Thomas William, and Lena.

Picotees Light and Heavy Purple-Edged.—Amelia, Calypso, Her Majesty, Mrs. Chancellor, Muriel, Polly Brazil, Ann Lord, Clara Penson, Jessie, Mrs. Kingston, Nymph, and Silvia.

Picotees Rose- and Scarlet-Edged, Light and Heavy.—Constance Heron, Mrs. Payne, Liddington's Favourite, Mrs. Rudd, Rosie Sydenham, Cordelia, Daisy, Ethel, Little Phil, Mrs. Sharp, Nellie, and Amy.

Picotees Yellow-Ground.—Annie Douglas, Eldorado, Golden Eagle, Mr. Nigel, Badminton, Stanley Wrightson, Mrs. Robert Sydenham, Hygeia, Mrs. Tremayne, Countess of Jersey, Florrie Henwood, Ladas, Voltaire, Miss Alice Mills, Empress Eugenie, Wanderer, Dervish, and His Excellency.

The new disease, *Heterosporium echinulatum*, or "Rust," has been very troublesome in recent years, and it has certainly done much mischief when not taken in good time. It may be recognised by the blisters which appear on both sides of the leaves. These burst in time, and a chocolate-coloured powder is scattered. The best time to deal with the disease is on its appearance. All the diseased leaves should be picked off before the spores of the fungus are scattered. There are certain prepared liquids said to be effectual in destroying the fungus, but my own impression is that nothing will touch it when it has developed between the membranes of the leaves. The liquid might kill the resting-spores before they have penetrated the leaf.

"Spot" (*Uredo dianthi*) is sometimes very virulent; it is induced by certain states of the atmosphere in autumn, favourable to its development. The affected portions of the leaves should be cut off. The plants are seldom attacked if kept in a greenhouse; and if they be attacked in a frame, the disease may be checked by removing the plants to an airy greenhouse. It is a waste of time to dip and wash plants in various solutions to destroy "spot."

Greenfly is very troublesome, but it can be destroyed by fumigation with tobacco, if the plants be under glass, or, if out-of-doors, by dusting with tobacco-powder. Greenfly seldom, however, does any damage to planted-out Carnations, but the insects are found frequently on those in pots.

Thrips also attack the flowers when in an unopened state, and those who grow for exhibition are frequently obliged to hurry

the plants into the house in order to fumigate them, as this is by far the most effectual method of disposing of the pest. Earwigs are troublesome when the flowers are open ; they lurk in the calyx and eat the petals through at their base. They must be destroyed by hand picking, or trapped by hollow beanstalks fixed between the stem of the Carnation and the supporting stick.

A species of *Tylenchus* (eelworm) attacks the young layers at their base. The eggs are deposited in the stem or base of the leaves, and the worms feed inside, causing a considerable swelling of the stem, which becomes ruptured, and the plant ultimately dies. Burning the diseased plants is the only way to get rid of the pest, which is usually introduced with the soil. The old soil should be thrown away.

The Carnation Maggot (*Hylemia nigrescens*) has become very troublesome of recent years. It eats down the centre of the young growths, or it will attack seedling-plants as soon as the first leaves after the seed-leaves are formed. Its presence is discovered by the decay of the centre leaves, when it must be dislodged by means of a pin or a needle. The maggot is the larva of a small black fly very much resembling a house-fly.

The Garden Pink (*Dianthus plumarius*).

This time-honoured inhabitant of our gardens is presumed to be the original source from which has been derived the beautiful varieties of the Garden Pink. It is a charming, old-fashioned garden plant, easy to grow, very beautiful, and with a delicate Clove scent, which to some is more grateful than the perfume of the Carnation. Many persons can grow Pinks who have not the means to cultivate the Carnation and Picotee ; they can be grown in almost any garden, and require no glass protection at any time.

CULTURE.—This is simple enough. The plants should be obtained in the autumn, and be planted out where they are to flower early in October, or even in September if good, strong plants can be obtained. The object of planting out early is to have them well established before the winter sets in, as alternate frosts and thaws will lift them out of the ground. If this occurs, they must be pressed in again with the fingers, when the ground is in a condition to admit of this being done.

Another detail which must not be lost sight of is the fact that unless Pinks are planted out early in the autumn, the lacing, which is the first point in the standard of excellence, will not be

perfect. Spring-planted Pinks put on the lacing badly, or not at all. They are sometimes grown in pots; but in this way the lacing never comes out well.

Any good garden soil is suitable for the Pink, but it ought to be worked to a depth of about 18in., and should be enriched with a liberal dressing of decayed manure; it ought also to be in a good easy-working condition at the time of planting. Florists who make a speciality of the Pink, prepare beds for it, and the plants are set out some 9in. asunder, and the same distance between the rows. If the soil is rather heavy, or not in a good working condition, the plants have a much better chance if they can have some soil prepared similar to potting-soil placed around the roots. This gives them a fair start, and may even mean the difference between success and failure. Stirring the ground between the plants with a Dutch hoe keeps down weeds, aerates the soil, and does much good. When hot weather sets in, the surface of the ground should be mulched with decayed manure, and if water is required this should be given freely—merely wetting the surface soil is of no use; it must reach the roots. The plants are sometimes eaten over in the winter by an unseen enemy. It may be rabbits, but it may also be what gardeners term the Leather Jacket, or larva of the Crane Fly, or Daddy Long Legs (*Tipula oleracea*). This is really a troublesome pest, and can best be destroyed by watching for it with a good lamp at night. It burrows in the ground, and is seldom found feeding by day.

Propagation is effected by pipings, by layers, and, to obtain new varieties, from seed. The first is the usual method. The growths at the base of the flower-stems are slipped off, and inserted in fine soil in a garden-frame or hand-light, but they must not be shut up too close, or they are likely to drop off. They may even be put out in the open garden, in a shady part, and when this is done a cloudy, damp day should be selected. The pipings should be put into the ground with the finger, pressed firmly, and afterwards watered with a fine rose. The end of June or beginning of July is a good time to insert them. If the growths are layered, this may be done about a month earlier than the Carnations, and in a similar way. Seed may be sown in the spring, and the plants will flower the following season. They should be planted out in the open garden, and be treated exactly as advocated in the case of the named varieties of Carnations.

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Two classes of Pinks are recognised. The Laced or florists' type, which has been in cultivation for many years, are grown exclusively in the border. The forcing Pinks are self-coloured, or purple and reddish-purple combined. The old-gardeners did not hold this flower in so much esteem as the Carnation. Rea, who published a "Complete Florilege," in 1676, says: "Pinks are of many sorts, and little esteem; they flower with Roses in June, and every ordinary gardener knows how to dispose of them, as also that vulgar plant called Thrift."

The forcing Pinks are really very charming, and a succession of blossoms can be kept up from March until June. The pipings must be put in as early as March, and the plants can be grown on in boxes until they are ready to plant out in the open garden in May. If provided with good, rich soil, they form large clumps by the end of the season. In September they should be lifted and planted in 6in. pots, larger or smaller ones being used according to the size of the plants. They should be potted firmly, and placed in frames until the plants are removed into warmer quarters, when successive batches of them may be stood in the forcing-houses.

VARIETIES—The following Laced Pinks are now in cultivation. It must, however, be observed that they vary very little in colour, and one may fairly describe them as deep red, rosy-red, and reddish-maroon. The colour is in the centre of the flowers, the remainder of the petals being white, with a band of colour near the margin: Bertha, Bertram, Boiard, Clara, Device, Emerald, Empress of India, George Brown, George White, Harry Hooper, Lady Craven, Minerva, Miss Pomeroy, Mrs. Darke, Mrs. Waite, Reliance, Sarah, and The Rector.

The best of the forcing Pinks, Selfs and Fancies, are as follow: Alice Lee, white mule Pink; Anne Boleyn, rosy-purple, darker centre; Ascot, pink, deep red centre; Clove Pink, rose; Ernest Ladham's, large blush, claret centre; Her Majesty, large white; Homer, rose, darker centre; Mrs. Lakin, white, pale rose centre; Mrs. Sinkins, large white; Paddington, pink, dark centre; Snow-flake, pure white; Albino, a new white variety, with large, well-formed white flowers.

The Dahlia (*Dahlia variabilis*).

For the decoration of the flower-garden in autumn this is certainly the showiest of flowering plants grown; it is also the mainstay of the autumn flower shows. There has been a great

advance, during the last decade or two, in the improvement of the Dahlia. By careful cross-fertilisation and judicious selection, improvement has been continuous. The reputed parent of the garden varieties is *Dahlia variabilis*, discovered in 1789, and named in honour of Dahl, a Swedish pupil of Linnæus. It first found its way into England through Lady Holland, who sent seeds of it from Spain; plants were raised from these seeds, and flowered in the gardens at Holland House in 1805. The first double flowers were produced four or five years subsequently. By referring to the gardening books published early in the century we find that in 1814 the Dahlia was extensively cultivated, and considerable improvement began to be effected. Twenty years later, on March 1st, 1833, the first number of the *Floricultural Cabinet* came out, and the first coloured plate published that month was of a new Dahlia—Commander in Chief. The coloured plates in this cheap publication were of poor quality, but it shows a flower quite double, of a deep reddish colour, and reflexed petals. The first really good double Dahlia was raised in 1832 by a Mr. Line, at Springfield, near Bromley, in Kent, and was sent out by Mr. Inwood, of Putney Heath, under the name of Springfield Rival.

At this time Dahlia exhibitions were organised near London, and the fame of the Dahlia spread all over the country. With the demand for new Dahlias, raisers of seedlings abounded. The most successful amongst them was the late Mr. John Keynes, of Salisbury. He was fortunate, he says, in raising a fine variety with flowers approaching to blue, which he sold to a Mr. Mountjoy, for £50. Mr. Keynes adds: "Since that time (about 1840) I have never ceased to grow seedlings, and I am free to confess that the great charm of floriculture would be dispelled, if I had no seedlings to anticipate." He adds the following practical remarks: "I leave my flowers pretty much to themselves until about September 15th, making it a rule never to cut any plants for show, when I would sacrifice seed by so doing. About that date I cut the plants to scarecrows, leaving only the few flowers that may be coming into blossom, and these produce seed in abundance. I sow my seed about March 10th, taking care that the pans containing the soil are placed in heat a day or two previously. Good seed is generally very thin. I care little for a plump seed." The seed sown in spring will produce plants that will flower in the open border the same season. The work so well begun by Mr. John Keynes, was carried on by other

enthusiasts, until large, handsome, perfectly-globular flowers were produced, of what amateurs termed Show (Fig. 6) and Fancy



FIG. 6.—SHOW DAHLIA GLOIRE DE LYON.

varieties, when the highest standard of excellence was reached. Small forms were produced, which have been designated Pomponne Dahlias (Fig. 7). These are more useful as cut-flowers, and when well set up, quite as effective as exhibition plants. They have attained as high a standard of excellence as the large-flowered section.

By the introduction of *D. Juarezii*, the Cactus Dahlia, quite a new type of flower was introduced. Fanciers have taken it in hand, and still further improved it for border-culture, while the variety is a distinct feature at the autumn exhibitions. About the time of the introduction of the Cactus Dahlia, there was introduced a pretty form of *D. variabilis*, named Paragon. It had single flowers like its first parent; but soon the single-flowered varieties became popular, and now we find certain amateurs rejecting the double-flowered varieties in their seed-beds, and saving only such as have flowers of improved form, with single flowers (Figs. 8 and 9).

The garden varieties in all the above sections are very numerous, and are being added to year after year. Almost every florist of any pretensions publishes lists of the best varieties, and these are being altered every season. A select list, however, will be found at the end of this chapter.

CULTURE.—The methods of saving seed and raising seedlings have been already described. We will now deal with propagation by cuttings, which is the usual way of obtaining a stock of plants. The tubers which have been preserved during the winter in a dry place, where frost cannot penetrate, should be planted



FIG. 7.—POMPONE DAHLIA LITTLE SWEETHEART.

in boxes, in February, and placed in a hothouse where there is a moderate temperature. They will soon begin to grow. As

soon as the shoots have attained a length of 2in. or 3in., they may be taken off and planted singly as cuttings in thumb pots, and stood in a forcing-house or on a hot-bed. Each cutting will form roots, and as soon as they are well-established they should be potted on into larger sizes, and inured to a cooler atmosphere.

The Dahlia is one of the very easiest plants to propagate, and also to grow on for planting out. All that is required in

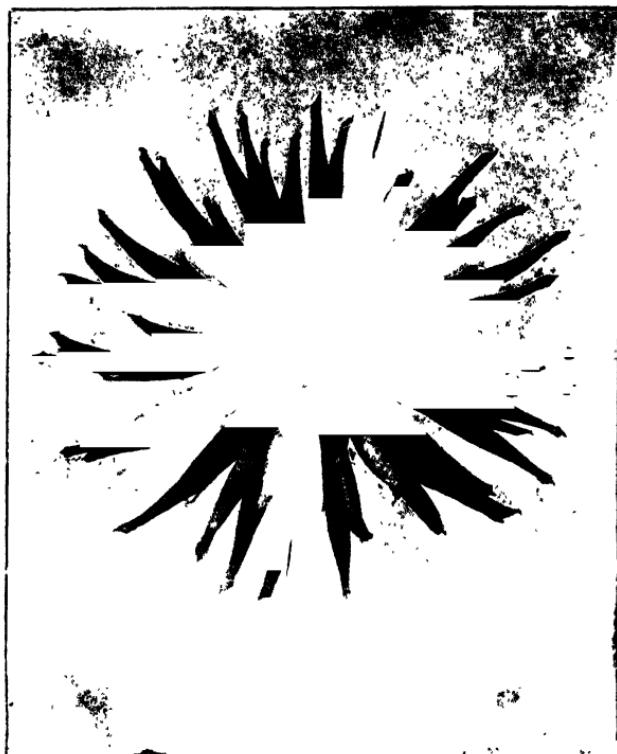


FIG. 8.—CACTUS DAHLIA MISS FINCH.

the early spring is to see that the plants receive no check to their growth. They are necessarily propagated in a warm temperature, and in the process of inuring them to that of a greenhouse or a garden-frame, they should not receive any check from cold winds or a low night temperature.

Another method of propagation is by producing what gardeners term "pot-roots." These are produced by taking off

the surplus side-growths from the Dahlias in the summer; they are cut through just under a joint, and struck as cuttings in garden-frames. When well-rooted, they should be potted off into large "sixties" or small "forty-eights." They will finish up their growth in the autumn. Such plants can be started in the spring, and when they have made some growth they should be transferred to larger-sized flower-pots. It is a

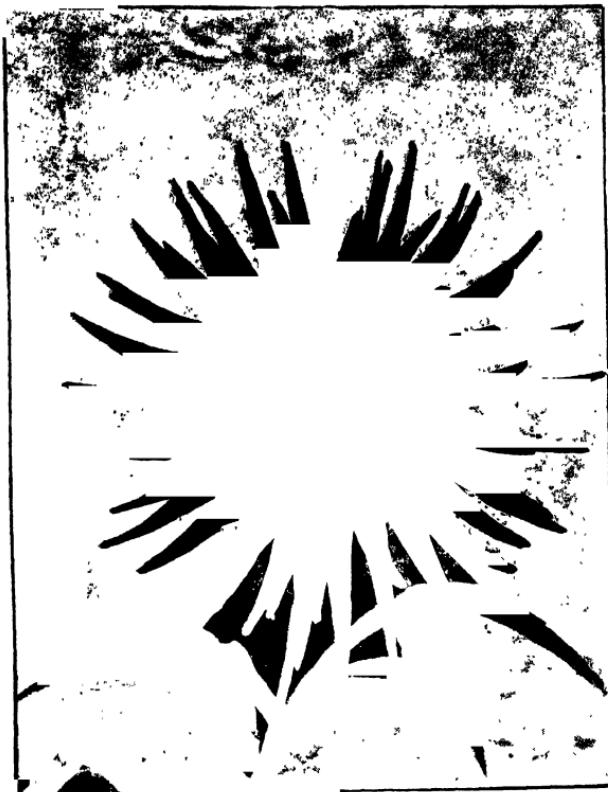


FIG. 9.—CACTUS DAHLIA MRS. JOHN GODDARD.

mistake to plant out too early. The first week in June is a good time. I would rather transfer the plants to larger flower-pots than turn them out, if there is any danger of frost. The plants are usually kept in ordinary garden-frames, and before planting out they should be thoroughly inured to the open air by the lights being removed by day, and also at night if there is no probability of frost.

The Dahlia is a gross-feeding plant, and requires a rich, deep soil in order that the blossoms may be fully developed. It ought, moreover, to be trenched about 2ft. deep, and during the process a good supply of rich farmyard manure should be worked in. The operation of trenching should be done in the previous autumn, before the ground is saturated with the autumn rains. In fine weather in winter the surface ought to be forked over to a depth of 3in. or 4in. This will allow the air to penetrate more fully into the soil, getting it into the very best condition for planting in the season. At planting-time it is best to put the permanent sticks into the ground. Stout sticks, standing 3ft. to 4ft. out of the ground, and penetrating 15in. less or more, should be selected. If the soil is in good condition, sufficient should be dug out in front of the sticks to allow the ball of the roots to go well into the soil. The plants should be firmly inserted, and tied to the sticks at once. If the soil is not in good condition, it is an excellent plan to dig out a spit or two of mould, and replace it with some prepared soil, such as would be used in repotting the plants. In favourable weather they will soon grow away vigorously, when all the side-growths ought to be removed except four. These should not be tied up in a bundle—each should have a separate stick to support it; then by careful training a very handsome plant will be produced.

At this time it cannot be denied that the plants require considerable attention. As the growths advance they must be tied to the sticks, and the earlier ties must be seen to, as otherwise they have a tendency to cut into the succulent growths of the plant. When hot, dry weather sets in, water must be applied very freely to the roots, and a mulch of decayed manure is excellent to prevent the moisture from too rapidly evaporating. If the very finest show blossoms are required for exhibition, it is necessary to shade some of the varieties. Cardboard caps are put over the flowers, and held in position by a stout stick driven into the ground.

The plan adopted by the old florists, when the Show and Fancy varieties were the only kinds grown for exhibition, was to drive a stout stick into the ground, and on the top of the stick was nailed a board about 9in. square. There was a slit in the board wide enough to draw in the stem of the Dahlia blossom intended to be shaded; the tips of the back petals of the blossoms rested on the board, and an inverted flower-pot shaded the blossom. Earwigs will get into the blossoms if they are not trapped

and carefully watched. Thrips are also very troublesome, but each blossom can be tied up in a muslin bag to prevent its being injured by these lively pests of the Dahlia-grower.

The Pansy (*Viola tricolor*).

One of the most charming of garden flowers, and an undoubted native of Britain, is the Pansy ; but what a difference between the tiny wildling of cultivated ground in England and the lovely flowers of our gardens ! Shakespeare gives it its true English name of Pansy. Who does not know the remarks of poor demented Ophelia ? "There's rosemary, that's for remembrance: pray love, remember: and there is pansies, that's for thoughts." Spenser writes of the " pretie pawnce," and Ben Jonson—"tuneful Ben"—also alludes to it as "The panzie this ; O, that's for lovers' thoughts ;" but the sweet flower so much in lovers' thoughts had not attained to a high state of excellence if we are to judge by the examples figured in the "Floricultural Cabinet," so late as the year 1832 and onwards. The improvement in the flower was, however, very rapid during the next quarter of a century, as the coloured plates of it from 1850 in "The Florist" abundantly testify. About that time the Belgian, or Fancy Pansy, was introduced. Previous to that we cultivated the Show Pansy, as it was termed, divided then, as it is now, into three sections, White-Ground, Yellow-Ground, and Selfs ; and the old-fashioned florists for years would not look at a Fancy Pansy. Now, the Fancies, like the Japanese Chrysanthemums, have taken the lead as garden flowers. Fig. 10 represents a Fancy Pansy, and Fig. 11 a Rayed Viola. The two illustrations are given side by side, as amateurs frequently confuse Pansies with Violas.

CULTIVATION.—The Pansy is a flower requiring but little attention, even to grow it to perfection : but then the attention that it needs is not always bestowed upon it. As it is easy to cultivate, so also is it propagated without any difficulty. To obtain new kinds seed must be saved from the best varieties, and be sown in July. The plants will be strong enough to put out where they are to flower in October ; the soil ought to be prepared if possible three months previously, by trenching the ground at least 15in. deep, if the nature of the soil will admit of such a depth. If the ground is heavy, cow-manure should be used ; and a good dressing of it should be given. A layer may be placed in the bottom of the trench, and another about 5in. or 6in. below

the surface. Of course, if some good loam could be obtained, mixed with decayed manure and leaf-mould, a layer of this, 3in. or 4in. deep, over the surface, would be very desirable; but it cannot always be had, and most people have to put up with the ordinary soil of the garden. If the soil is heavy, some river-sand should be added to the surface and lightly forked in. I plant seedlings 1ft. apart, for in good soil they make rapid growth, producing flowers in great abundance.

Named varieties must be propagated by cuttings only. Some persons have an idea that by saving seed from a named variety



FIG. 10.—FANCY PANSY.



FIG. 11.—RAYED VIOLA.

of a Pansy or a Carnation, that the variety from which the seed has been saved will be reproduced. This is an error. It is very likely that some of them will resemble the parent; but, the largest proportion of them will not. It is advisable to cross-fertilise the best varieties; as, unless this is done, the results will not be so satisfactory. Cuttings strike very freely in a shady place, and they are better without glass in the form of hand-lights or frames. I find a place on the north side of a wall or fence, and insert the cuttings, some time in July or August, or even as late as September. The best cuttings are those taken from the centre of the plants. They are small,

slender growths (the thick, pithy, flowering growths are useless), and have generally plenty of rootlets formed or forming at their base. If they are carefully pulled out, a score or more of these growths may be obtained from one plant. Dibble these rooted slips out in rows, about 3in. asunder, in fine sandy soil, and in the shady position on the north side of a wall or building: no other artificial shading is necessary. They should be strong enough to plant out where they are to flower about the end of September or early in October; and the same treatment is necessary for named varieties as for the seedlings.

Pansies are quite hardy, but even a hardy plant will not pass well through the winter unless it is well established in the ground; and highly-bred Pansies may not be quite so hardy as the wild plant. After planting, and if the growths are long, it is better to peg them down, rather than to place sticks to the plants. The ground should be kept free from weeds, and the surface stirred occasionally if it becomes hardened by rains.

Wire worm is troublesome in new soil, and may be brought in with the loam; but it is seldom found in an old, cultivated garden. Another troublesome pest is the Leather Jacket, which burrows in the ground by day, and may be detected feeding at night. Slugs are also found feeding on the blossoms, rather than on the leaves. Growth goes on even in winter, when the weather is mild; and as the spring advances, it is of course more rapid. Flowers are freely produced, but it will be found that unless something is done, the successional blossoms rapidly deteriorate. This they will not do to a great extent, if the poor quality blossoms are cut off, and the ground is dressed with 2in. of a rich compost, say half manure and half loam. The growths should be pegged into this, and the plants will produce blossoms again of the best quality. It is astonishing how rapidly the roots of Pansies exhaust the soil to a considerable depth. A second dressing should be applied if the plants again show signs of distress. When Pansies are grown for exhibition, the flowers should be kept removed from the plants up to fourteen days of the date of exhibition, and the growths must not be crowded.

The Pansy succeeds so well in the open border that it might seem superfluous to grow it in any other way; but it can be grown in garden-frames to a very high state of perfection. Indeed, the Council of the Royal Horticultural Society thought

so highly of this method of culture some twenty-five years ago, that prizes were offered by it for Pansies grown in flower-pots, and exhibited in April, and a few very beautiful specimens used to be exhibited. The plants must be kept as close as possible to the glass lights, and these should be used only to protect the plants from rough weather. The very earliest slips or cuttings should be used for the pot-plants. One or two plants may be potted into large "sixties," and when they have well filled these small pots with roots, they should be repotted into "thirty twos" (6in.). A rich soil composed of three parts of good fibrous loam, one part of decayed cow-manure, and one part of leaf-mould, with a little sand added if necessary, must be used. When grown under glass, a species of aphis of a reddish colour attacks them, but it is easily destroyed by fumigating.

From good strong plants, if the weather be mild, a succession of blossoms may be had from Christmas onwards, and lovely large clean blossoms they are; but it must not be forgotten that slugs are the desperate enemies of Pansies in frames, and that they eat the blossoms rather than the leaves. They must be watched at night. It is a good plan before arranging the plants in the frames to dust the ground thickly with soot. I find this even more effectual than quicklime. The latter is no use after it has been wet: it will destroy the pests when first applied; but soot retains its effect for a long period, and is more likely to keep the voracious pests at bay.

VARIETIES.—The following is a list of the best Fancy Pansies. They are all of large size, good form, and of very rich and varied colours. There are, of course, many equally good, but new varieties are being added yearly, and those who would purchase a collection can easily obtain a catalogue from a trade grower, and therein will be found all the best varieties up to date, and described according to their colours: Agnes Mabel, Alexander Smith, Andrew Frater, Bernard Doulton, C. B. Renshaw, Cleopatra, Colonel M. R. G. Buchanan, Emmeline, George Stuart, Ladas, Marmion, Mrs. C. Lambie, Mrs. D. Johnstone, Mrs. R. G. Moir, Mrs. William Lockwood, Mysie Paul, Petunia, Stephanie, Tamworth Herald, Tamworth Yellow, Tom Walters, W. J. Pye, W. H. Clarke, and William Sydenham.

The **Viola, or Tufted Pansy (*Viola cornuta*)**.

The beautiful garden-plants cultivated under the name of Violas may be said to be quite modern. They had their origin

something like forty years ago, at a time when the bedding-out of greenhouse-plants was the leading feature of most of the gardens in England. At that time the popularity of any new plant was assured if it was adapted for "bedding-out." Amongst other

plants brought into prominence for that purpose was *Viola cornuta* (Horned Violet) (Fig. 12). This pretty plant had been grown in gardens for nearly a century. It was figured in the *Botanical Magazine* in 1805, Tab. 791, and Dr. Sims, the then editor, stated that the plant was in-



FIG. 12.—*VIOLA CORNUTA*.

troduced to the Royal Gardens, Kew, by Dr. Ortega, in 1776. It is stated to be a native of Spain and Mount Atlas. The flowers are pale blue in colour. The specific name is in allusion to the peculiar formation of the sepals; while the common name of "Tufted" has reference to the habit of the plants. This plant was grown by thousands as a bedding-plant, and it subsequently became cross-fertilised with the Show Pansies. The produce of this cross were grown as Violas. The hardier, more wiry constitution of *Viola cornuta* was transferred to the offspring of this cross, and although the form of the so-called Violas has been vastly improved, the constitutional vigour of *V. cornuta* is still there, and the plants resist winter's cold and summer's heat better than the Show or Fancy varieties of Pansies.

Another species used was *Viola lutea* (Yellow Mountain Violet). The flowers are bright yellow, and the plant is found on the higher mountain pastures of Britain. This plant never resisted the drought so well as the Horned Violet (*V. cornuta*), but it was used a good deal for bedding-out, and is probably the parent of the yellow forms of the Tufted Pansy.

CULTIVATION.—The culture of Violas and Pansies does not differ materially, except that better results are obtained with the Viola, and with considerably less trouble. This does not imply that it is not desirable to take pains with the culture of this charming, hardy, border flower. In good, deep garden loam, well-enriched with decayed manure, the Viola will give a

vigorous and sustained display of its beautiful blossoms, from early spring until the fall of the leaf in autumn, when frosty nights check the growth of the plants. Of course, during the period between early spring and late autumn, the plants require the careful hand of the gardener to keep up a good display of blossoms. There is nothing to do during the early months of the year, except to keep the plants free from weeds, and stir up the surface of the soil occasionally, as it is apt to become caked by rains, and not in a condition to promote a healthy, vigorous growth. The Viola, as well as the Pansy, must be kept moist at the roots. Few plants have such an immense mass of rootlets, spreading in all directions, and if dry weather sets in they soon extract the moisture from the surrounding soil. It is therefore very desirable, as soon as hot, dry weather sets in, to place a thin layer of decayed manure all over the surface of the beds, and to water freely. A good soaking is necessary, so that the water will go down to the rootlets. It will carry the fertilising properties of the manure with it, and will aid greatly in keeping up the blossom in fulness and quality all through the season; but it is not well to allow the plants to become overcrowded with growth and blossom. If, as sometimes happens, a brilliant display of blossom is wanted on a particular date—and this applies to Pansies as well as Violas—I advise picking off the blossoms about two weeks before the date, giving a surface-dressing, and pegging the shoots down into it. Even if the plants have become exhausted by a long period of plentiful blossom, they will start again if well supplied with water (if needed) like giants refreshed, and the blossoms will be abundant and of good quality.

There are now two sections of Violas. The early types had rays of colour, striking out from the centre of the blossom, but after a time seedlings were obtained of better form, and without rays, or, at least, the rays were inconspicuous, and from the point of view of the florist, the rayless varieties were the best, and this type of flower has been greatly improved in recent years.

Planting should be done in the autumn, in order to get a good display in spring, and they should be strong, well-established plants. Propagation should take place in July and August, in the same manner as advised for Pansies. Plant out permanently in September or October the same distance, viz., a foot between the plants. It will also be well to plant out a bed or

border of Violas in the spring. Seedlings may be treated in the same manner as named varieties. The Viola is still one of the best plants for bedding-out purposes, and lines or masses of colour, according to the taste of the owner, may be planted, and the effect is very good indeed.

VARIETIES.—The following is a selected list of the best varieties : Amy Barr, Blanche, Britannia, Charm, Councillor Waters, Devonshire Cream, Duchess of Fife, Florizel, Formidable, George Lord, Goldfinch, John Quarton, John Shires, Kitty Hay, Magnificent, Mary Stuart, Mrs. J. Donnelly, Mrs. R. Hare, Niphетос, Pembroke, Rover, Stephen, William Neil, and Wm. Haigs.

The Garden Tulip (*Tulipa Gesneriana*).

"The Tulip asketh a rich soil and the careful hand of the gardener." This fine old garden flower has a history of its own both in Britain and on the Continent of Europe. Most gardeners have read of the Tulip mania in Holland, so long ago as the years 1634-37. It was nothing more than a speculation, which made an old writer exclaim, "Great is the folly of mankind." Beckmann, in his interesting book, "The History of Inventions and Discoveries," gives a full account of this gambling traffic, as he calls it. He says, "During the time of the Tulipomania a speculator often offered and paid large sums for a root which he never received, and never wished to receive. Another sold roots which he never possessed or delivered. Oft did a nobleman purchase of a chimney-sweep Tulips to the amount of two-thousand florins, and sell them at the same time to a farmer, and neither the nobleman, chimney-sweep, nor farmer had roots in their possession, or wished to possess them. Before the Tulip season was over more roots were sold, purchased, bespoke, and promised to be delivered, than in all probability was to be found in the gardens of Holland. And when Semper Augustus was not to be had, which happened twice, no variety, perhaps, was oftener purchased and sold."

Persons who dealt in flowers in this way could not have any real love for them as objects of beauty, and a source of pure delight to the cultivator. Some of us are old enough to remember the time when bulbs of Tulips were sold at very high prices. As late as the year 1854, Mr. Groom, of Clapham Rise, published a catalogue of Tulips. Three varieties in his list were priced at one-hundred guineas per bulb. They were Miss Eliza

Seymour, Duchess of Cambridge, and Princess Mary of Cambridge. There were other varieties catalogued at the same time at fifty guineas, twenty-one guineas, and ten guineas, respectively. Probably Mr. Groom died about this time, as his entire collection of Tulips was sold by Messrs. Protheroe and Morris as they stood in the rows, seven bulbs in a row; but they realised poor prices, the highest price given for a row being under seven guineas. Mr. Groom was one of the leading cultivators. He prepared his Tulip beds of rather poor sandy soil, and his notion of good culture was to starve the roots so as to obtain purity in the cup—that is, the base of the petals.

The late Mr. Samuel Barlow, of Manchester, a leading northern cultivator, did not believe in starving his Tulips. He says "Purity and refinement are not achieved by starvation."

The Tulip will grow and flower well in ordinary garden soil which has been prepared by trenching it to the depth of 18in. or more, and working in during the process a fair proportion of decayed farmyard manure; but there should be about 6in. of good garden soil above the top layer of manure. It is very desirable that the soil should be prepared some time before the bulbs are inserted, so that it can be well-pulverised by exposure to the air. If the soil is trenched up in September it might be in good condition by the first week in November, which is a very good time for planting. The old-fashioned system of planting is a very good one. The bulbs were planted in beds about 4ft. wide, with an alley between the beds 15in. to 18in. wide. Each bed would contain seven rows of Tulips. The outer rows should be 3in. from the edge of the beds, and if spaces of 7in. be allowed between the rows that would exactly fill up the 4ft. width. The bulbs should be inserted 7in. apart, and about 5in. deep. If the ground is heavy, some sand ought to be added to it and dug in, for it is well known that a sandy soil suits the Tulip best. Although good results are obtained by planting the Tulip in ordinary soil, it is well to suggest that if time can be spared, and material is available, it is a good plan to dig out the ordinary soil to the depth of 6in. or 8in., and replace it with decayed fibrous loam well chopped up, and mixed with some coarse sand. In this virgin mould the very best results are attainable. The old florists also knew well to what height certain varieties would grow.

With seven rows in a bed, the centre row would be the fourth from either side, and the florist arranged his bulbs into first,

second, third, and fourth row varieties, according to their height, the tallest of course being in the centre of the bed. They were all planted, too, according to colour and class, and no labels were used. The fancier had a book, and the plan of the



FIG. 13.—FLORISTS' TULIPS IN A BED.

bed was sketched in it, and every bulb planted was entered in the book according to its name and class.

There are three classes of Tulips: Bizarres, Byblemens, and Roses. These are again divided for garden and exhibition purposes into Feathered and Flamed Tulips. The ground-colour in the Bizarres is a clear yellow, and in the Byblemens and Roses a pure white. The flame and feathering on the Bizarres is red, chestnut red, or maroon; some have the markings so dark as to appear almost black, such as may be seen in Storer's William Lea, or Slater's Masterpiece. The red ground is prominent in Storer's Dr. Hardy, or Bowler's Everard; there is the chestnut feathering in Ashmole's Garibaldi. The Byblemens have the colours of a deep rich purple or shades of purple, so dark in Jackson's David Jackson that the fanciers describe the feathering as black. Hepworth's Bessie is also a handsome variety, with beautiful purple-black feathering on a pure white ground. Other varieties are feathered and flamed with various shades of colour; in a few the purple almost verges into lilac.

The Roses, as they are termed, are also of many degrees of intensity, and very charming in the flamed and feathered state. As illustrations of the various shades of colour we have Industry (Lea), a bright carmine scarlet feather on the purest of white grounds. Heroine is a true Rose, generally finely-feathered on a very pure white. Nanny Gibson (Hepworth) has a brilliant scarlet feather on white, and is very lovely in this state. Another shade of colour (rosy-red on pure white ground, both flamed and feathered) is found in Charmer, Mabel, Mrs. Lomax, and Pretty Jane, raised by a florist named Martin. These are all one



FIG. 14.—A GROUP OF FLORISTS' TULIPS.

variety, and it may be well to point out how this happens. Nearly all seedling Tulips flower first in what florists term the "breeder" state, that is, as self-coloured; and for some years it will continue

to flower as a Self, and it passes into the hands of various florists in this breeder state. But by-and-by the breeders will break into flamed or feathered flowers. Brown may have one, Jones another, and a third may be in the hands of Robinson. Each of these florists claim the right to name any variety that may break into the flamed or feathered condition in their hands; but they are all the same thing, varying slightly in the quality of the markings, and whoever happens to get the best break claims to have the finest strain. The same remarks apply to all the other classes. Again, a florist such as the Rev. F. D. Horner obtains all the best strains in existence in all the classes, and florists get to know of the superior quality of the Tulips grown by him, and they may obtain this strain, calling it "Horner's strain," probably because they know well that a fastidious florist will not grow a bad strain of any of his favourites. Besides the above-named Tulips (Figs. 13 and 14) there are the beautiful species and their varieties. These will be dealt with under "Hardy Bulbs and Tubers," Chapter VI.

CULTURE.—The following is a short *résumé* of culture. The beds being prepared as already advised, proceed with the planting very early in November. The bulbs should be put 5in. into the ground, and as it is usually in a rather wet condition at this season, I place a little quite dry sand under the bulbs, and a little more over them. Some growers in the North do not plant until December, but that is too late for the South, as the young rootlets begin to raise the covering of the base of the bulbs early in November, and they are ready to push out immediately they are put into the ground. Some time in January, the plants will appear above ground, and although the Tulip is a perfectly hardy plant, the leaves are likely to be injured by intense frost. Fanciers have an arrangement of iron hoops bent over their beds, held together by string, and mats are placed over the plants in frosty weather. It is also an excellent practice to mulch the surface of the beds with decayed stable-manure. This very effectually keeps out the frost, if not too intense, and also enriches the soil. It is not absolutely necessary to cover the Tulips with mats in this way, but it is certainly desirable.

About the end of April the flower-buds would be considerably advanced, and to bring out the markings of the flowers, and retain the colours as long as possible, it is absolutely necessary that they should be shaded from the sun, and sheltered from

frost and heavy rain. Florists have a framework erected high enough to walk under it, and over this is the shading, which is rolled up or let down at pleasure. This method answers very well; but old frame-lights may be utilised for this purpose. The lights are supported on a framework, and the sides have some shading nailed on to the posts that support the lights; in bright sunshine, shading is also placed over the glass, and in this way most beautiful blossoms are obtained. One of the best northern growers has built a light glasshouse over his Tulip beds; it is freely ventilated, of course, and in the cooler climate of the extreme north of Yorkshire this plan answers admirably—the growth of the plants, and the wonderful purity of the blossoms surpass expectation.

When the Tulip blossoms fade, the seed-pods ought to be broken off, and in three or four weeks after blossoming the bulbs may be taken up and stored in a dry place. The florists consider it is time to lift the bulbs when the flower-stems can be bent without breaking.

VARIETIES.—The following is a list of the best Tulips prepared by that eminent grower, the late Mr. Samuel Barlow:

Feathered Bizarres.—Commander, Demosthenes, Dr. Dalton, Garibaldi, George Hayward, John Radcliffe, Sir Joseph Paxton, Sulphur, and Target.

Flamed Bizarres.—Ajax, Excelsior, Dr. Dalton (this and some others are found in both the feathered and flamed state), Dr. Hardy, Everard, Lord Delamere, Masterpiece, Orion, Sir Joseph Paxton, Surpass Polyphemus, Sulphur, William Lea, and William Wilson.

Feathered Byblæmens.—Adonis, Alice Gray, Bessie, David Jackson, Friar Tuck, Mrs. Cooper, Nulli Secundus, Nimbus, Talisman, and William Bentley.

Flamed Byblæmens.—Adonis, Attraction, Bacchus, Carbuncle, Duchess of Sutherland, David Jackson, Friar Tuck, John Peacock, and Talisman (this variety is best in the flamed state).

Feathered Roses.—Annie McGregor, Charmer, Mabel, Mrs. Lomax, and Pretty Jane (these four are the same), Heroine, Industry, Lady Grosvenor, Lady Wilton, Madame St. Arnaud, Modesty, and Nanny Gibson.

Flamed Roses.—Adair, Annie McGregor, Lady Sefton, Mrs. Barlow, Triomphe Royal, and Sarah Headly.

Breeders' Bizarres.—Ariosto, Dr. Hardy, Excelsior, Horatio, Orion, and Sir J. Paxton.

Byblæmens.—Alice Gray, Ashmole's 112, David Jackson, Glory of Stakehill, Martin's 117, Miss Hardy, and Talisman.

Roses.—Annie McGregor, Lady Grosvenor, Lady May, Mabel, Mrs. Barlow, and Nanny Gibson.

The Gladiolus (*Gladiolus gandavensis*).

There are very numerous species of this fine genus of Cape plants in cultivation ; but, treating it as a florists' flower, we can deal only with the garden varieties, which have been obtained by careful cross-fertilisation during the last fifty years by amateurs and others. The Hon. and Rev. Dean Herbert began the work of hybridising more than sixty years ago ; but he was more of a botanist than a florist, and crossed numerous species which had been recently introduced from the Cape, but he did not follow up the work so as to obtain good forms, and thus bring the plant into the family of garden favourites. A French gardener of note, Mons. Souchet, gardener to the Emperor Napoleon at Fontainebleau, near Paris, was the first to make a decided florists' flower of the Gladiolus. He introduced many new varieties yearly through one or two of the Paris seedsmen, the flowers being of admirable form and substance. Messrs. Kelway, of Langport, still further improved it, and now there are hundreds of beautiful varieties in cultivation (Fig. 15).

CULTIVATION.—The Gladiolus is very easily propagated from seed, and the flowers can be cross-fertilised so readily that any amateur can do it. This is done when the plants are in flower in August, and the seed ripens about the end of September. As soon as the pods open they should be gathered, and laid out to dry in an airy room. The seed should be sown in pots or pans from the middle to the end of March. It will germinate freely in a slightly heated hot-bed. If the seeds are sown thinly the plants may be left in the receptacles in which they were sown. Bulbs, or corms, from the size of a pea to that of a hazel-nut, will be formed during the growing season. These small bulbs, if planted out in the open garden in rich, light soil in March, will give strong flowering-plants the same season, so that flower-spikes are obtained within two years of cross-fertilising the flowers. The Gladiolus is also propagated from the small bulblets produced at the base of the corms. A dozen or more of these may be produced from one bulb, and they soon grow into a flowering size.

In order to grow this handsome garden favourite well, the ground requires preparation, and a light sandy soil is best. If the soil is heavy, it must be well drained, and some road- or river-sand spread thickly over the surface, and lightly forked in. At one time I grew several thousands of the finer Gladioli varieties (seedlings and the best French sorts to name),



FIG. 15.—A GROUP OF FLORISTS' GLADIOLI.

and the soil was always prepared by trenching deeply the previous autumn. I mixed up some cow- and stable-manure in equal proportions; this was turned over two or three times, until the violent heat had abated, and the manure was half decayed. Two layers of this were worked in during the process of trenching, one layer at a depth of 18in., and another at 9in. This would be the maximum depth. Sometimes the greatest depth

would be 15in., and the lesser 6in. I liked to have the ground prepared not later than October.

During winter and early spring, when the surface is dry, I lightly fork it over. By the first week in March the ground is usually in good condition to plant out the first lot of corms. Drills as for Peas, 14in. apart, are drawn, and the bulbs, or corms, planted from 5in. to 12in. asunder, according to their size. The base of the bulb is placed about 4in. below the surface of the ground, some dry, clean, river- or silver-sand is put under and over each, and the drill filled in again. The ground is often in a wet condition when the time arrives for planting-out; if this is the case, I still draw the drills, and use dry sand; but the drill is filled up with some dry soil, usually siftings from the potting-shed. This gives the corms a good chance to start.

A fresh lot of corms should be planted every two weeks until the end of May, and this will give a succession of blossom until the end of the season. The plants soon appear above ground if the weather is favourable, and as soon as ever the rows of plants are discernible the Dutch hoe must be run through them to lighten the ground and destroy weeds. I use the hoe even if no weeds are to be seen. When the plants show that the flower-spikes are developing, sticks should be put to them to prevent their toppling over. When dry weather sets in, water must be applied freely, and the surface mulched with well-decayed stable-manure to prevent evaporation. The object is to obtain spikes of the greatest length possible and flowers of the highest quality.

Gladioli are exceedingly well adapted for cutting to place in rooms, if the spike is cut when the first four or six blossoms have opened; the remainder of the flowers will open in the house. I have cut scores of spikes, and placed them in bottles of water, arranging them in the greenhouse or conservatory. The bottles are kept out of sight, behind plants with green foliage, but which do not happen to be in flower. Gladioli have the best effect if their own foliage is used.

A few of the very choicest varieties must also be selected to save seed from, and they must be cross-fertilised. This is easily done. The seed-bearing parent must be selected, and before the flowers are half open the anthers pulled off with the fingers. When the flowers are fully expanded, the pollen from some superior variety should be taken when the flowers are also fully developed, and the stigma of the seed-bearer touched. This

should be done on successive days, until the entire spike has been cross-fertilised.

I have tried growing the Gladiolus in flower-pots, but do not recommend this method, as it is rather troublesome, and not very satisfactory as to results. I have had considerable experience in purchasing new varieties of Gladiolus, and had always to make up my mind for some losses. The plants would sometimes die off in a manner not to be accounted for, and sometimes when the blossoms were just on the point of opening. In the year 1875, quite half of a collection of Gladiolus of considerable value died off. It is very annoying to lose valuable plants in this way; but it is owing to a considerable extent to insufficiently decayed manure coming into contact with the roots; and as seedlings—at least to the extent of fifty per cent.—are as good as the parents, and a hundred or more plants can be obtained from one spike, it seems foolishness to spend money on expensive named varieties. It would not serve any useful purpose to give a long list of named varieties; these may be found in the catalogues of such specialists as

Kelway, Barr, Burrell, Veitch, and a few others. I advise amateurs to get a dozen of the best sorts of the season, and raise seedlings from them. The seedlings, after flowering for two or three seasons, have a tendency, as well as the purchased named varieties, to degenerate.



FIG. 16.—GLADIOLUS CORM,
HOWING METHOD OF
INCREASE.

adherent soil, saving the small bubbles (Fig. 16), or "spawn," clustering round the base of the parent corm, spread the corms out to dry in an airy place, and when well dried, store in boxes or bags until planting time; but they must not be exposed to frost.

The Royal Horticultural Society, the Crystal Palace Company, and other leading societies, gave me a score or more first class certificates for my seedling Gladioli; but they degenerated under

my own care, and I never thought it desirable to introduce them to the public, and all have passed out of existence. In some soils the conditions seem more favourable. Messrs. Burrell, of Cambridge, and Messrs. Kelway, of Langport, grow the Gladiolus successfully, and both firms seem able to place their seedlings on the market. At any rate, careful cultivation is necessary to ensure success.

The Ranunculus (*Ranunculus asiaticus*).

A charming garden flower, and one of the old-time favourites. When Parkinson published "The Garden of Pleasant Flowers," in 1629, he mentions only one double variety, which he terms

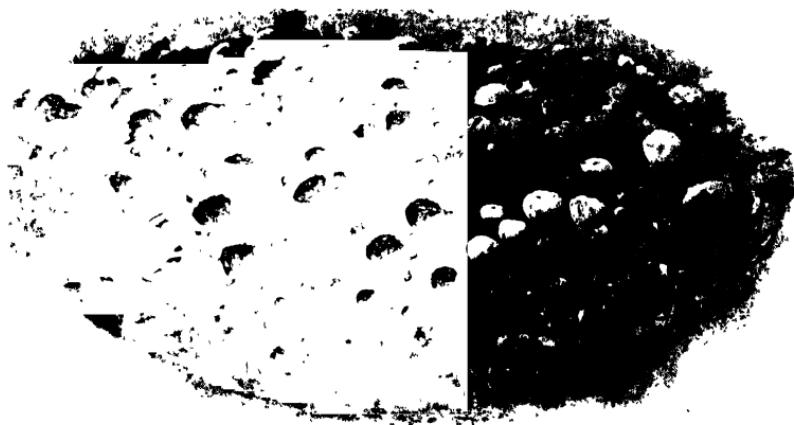


FIG. 17.—RANUNCULUSES IN BED.

the "double red Crowfoot of Asia." When Rea published his "Flora," in 1676, the Asiatic Ranunculus had become a general favourite. Parkinson's double red stands at the top of Rea's list of named varieties. After describing this old variety, Rea adds, "There are now several other nobler sorts of Ranunculus of Asia, with gallant double flowers, much excelling this old kind described, &c., &c." Scarlet and yellow were at this time the prevailing colours; and some scarlet with yellow stripes. Succeeding generations of gardeners improved the form of the Ranunculus, by raising seedlings, and not only so, but the rich and varied colours obtained were truly charming. These were

white, yellow, maroon, scarlet, crimson, and olive, with other flowers edged, striped, spotted, and mottled ; and here the greatest improvement obtained in the *Ranunculus* was by a clergyman, the Rev. Joseph Tyso, of Wallingford, in Berkshire. He effected quite a revolution in this flower, obtaining not only the most varied shades of colour, but also perfection of form.

CULTIVATION.—Like most florists' flowers, the *Ranunculus* is easily raised from seeds, which, of course, must be saved from the very best varieties. The flowers intended to bear seed must be fertilised, and also supported by small sticks. When the seed is ripe, it should be gathered and dried in an airy room. Mr. Tyso sowed his seed in October or January, and placed the seed-pans in a garden-frame ; under favourable conditions it germinated in four or five weeks. Air should be admitted freely to the frames, and early in May the seed-pans or boxes must be placed out in the open garden, where they can be carefully watered until the leaves decay. About the middle of July the small seedling tubers must be taken out of the soil, and dried in an airy room, not in the sun. After being dried they may be placed in a box in dry sand. They should be planted in the first week of March following, and they will flower most profusely the following season in June, the second season after sowing the seed. The seed should be sown thinly and evenly, and be just covered with soil.



FIG. 18.—RANUNCULUS ROOT.

Ranunculus roots can be obtained from any seedsman; they are usually priced at a cheap rate in the bulb catalogues—a hundred tubers can be obtained for three or four shillings. As I wrote twenty years ago, “There is no garden so small but might have space for a small bed (Fig. 17), or so large but that this modest flower might charm some quiet nook with its presence.” Many persons purchase a stock of tubers, but fail to grow them owing to careless planting or planting in unsuitable soil. The tubers are of small size, and do not succeed unless they are planted at a uniform depth. A good medium clayey loam is suitable, and the tubers should be planted early in March, when the soil is in good working condition. Drills should be drawn $1\frac{1}{2}$ in. deep and 4 in. apart. Some fine sand should be sprinkled in the drills, and the roots (Fig. 18) pressed gently into the

soil, about 2in. apart, and some sand placed over their crowns. The drills should be filled with fine sandy soil. As the leaves show above ground they will lift the soil with them, and as this is also loosened by the action of frost, it is a good plan to go over the bed and gently press the tubers into the ground with the fingers. They must be kept clear of weeds, and as soon as dry weather sets in, the surface of the ground may be mulched with decayed manure, and water supplied between the rows, taking care not to wet the leaves. Ranunculus require no other attention. The old florists used to fix an awning over the beds to protect the blossoms from rain and too much sunshine. Water must be withheld as soon as the flowers open. When flowers and leaves decay, the tubers should be taken up and stored in a dry place.

The florist's standard in this, as in all other flowers, is smoothness and breadth of petal. A perfect flower would represent half a globe, not less than 2in. in diameter at the base. The petals should be sufficient to quite fill up the centre, and whether there are two colours in the flower or one only, they must be clear and distinct.

The Polyanthus (*Primula acaulis*).

Like the Auricula, the Polyanthus winds itself round the affections of those who cultivate it. Sixty or seventy years ago the Polyanthus was esteemed as a florists' flower, and many beautiful varieties were in cultivation. The gardeners of that day worked up to a standard of excellence of their own, and grew only such kinds as are now known as Laced Polyanthus, though this term was then unknown.

Polyanthuses were very carefully cultivated as 'show flowers, and some of the varieties have come down to us, evidencing that they must have possessed considerable vigour of constitution. Some of them are still grown, and I have before me a list of the very best varieties which were grown about 1836 as exhibition flowers. One of them, Burnard's Formosa, was much esteemed, and a coloured plate of it was given in 1834, although I have never seen a truss with anything like such good blossoms. Other varieties were George the Fourth, Pearson's Alexander (this fine variety was raised by the grandfather of the Brothers Pearson, of Chilwell, Notts.), Invincible, Prince Regent, Lord Crewe, Bang Europe, Princess, Countess, Lord John Russell, Commander-in-Chief, Lord Nelson, Othello, Beauty of Over, and Mary Ann.

Nearly all of them are now out of cultivation ; but a few of the best still exhibited in the north are George the Fourth, Alexander, Cheshire Favourite, Exile, William the Fourth, Formosa, Lancer, and John Bright.

CULTIVATION.—This type of Polyanthus can be easily raised from seed, which should be sown in March in 6in. pots or seed-pans, in good sandy loam and leaf-mould. It will germinate freely in two or three weeks in a gentle hot-bed. The seed may also be sown in July, when it is gathered ; but at that time it is better to put the seed-pans in a shaded, cold frame. To obtain the best results, cross-fertilisation should be attended to ; and good parents must be selected, with all the best properties. They should also be very vigorous in constitution. Buck's George the Fourth is one of the most vigorous, and is generally well up in the properties. The parents ought also to possess well-formed flower-trusses, supported on stout flower-stems, about 5in. or 6in. in length. The "pip," or corolla, should be large, quite round, and smooth on the edges. The tube or throat of the corolla should be yellow, round, and well filled with anthers, and the ground colour of a rich dark red or a dark maroon. The centre ought to be a good yellow, and the margin of the same colour as the centre. The margin of the corolla is sometimes of a paler yellow than the centre, but this, in the eyes of the fancier, is a fault. The colours must be alike. The flowers should not be pin-eyed—that is, the stigma protruding from the eye, with the anthers down in the tube. The stigma should be down in the tube, with the anthers in the mouth of it. The anthers must be removed before the pollen is scattered, and the stigma can be dusted with some foreign pollen.

The seed ripens in August, and ought to be sown as soon as possible, or it may be kept until the following spring ; any time between February and April will be found suitable. A slightly-shaded position should be chosen for the plants ; where Primroses grow well is also suitable for the Polyanthus, but the fancier delights in having his choice Polyanthuses grown and flowered in pots. They can be potted up in July, August, or September in good loam, with the addition of a fourth part decayed manure. The best position for them is on the north side of a wall or fence, where they get a little of the afternoon sun. The plants must be well attended to as regards watering, and the leaves should be kept free from red spider, which is really their desperate enemy.

in the south. In the colder climate and moist atmosphere of some northern districts the pest is absent.

Exhibitors remove all the trusses of blossom but one, which is shown in a finely-developed condition. One of the best of the northern cultivators of this choice favourite grows one set of plants in his garden in a good position planted out for one season, and pots them up the next, so that he has one small collection in pots and another planted out. Five-inch pots are suitable, and one crown only should be planted in each.

The fancy Polyanthus have been used as exhibition plants in recent years in the south of England; indeed, the Laced varieties, as they are termed, have been excluded, owing to the difficulty of obtaining good plants. They were of such poor quality that the committee thought it best to omit them from the schedule of the National Society.

The rich and varied colours of the border Polyanthus have made them general favourites. Their culture is simple, as they are grown out-of-doors all the time, and are only brought under glass for a few days before the exhibition, and potted up for a week or so. They like rich, deep soil to grow in, and if it is inclined to be clayey so much the better.

The Hollyhock (*Althaea rosea*).

In this we have one of the stateliest of garden flowers, and one, too, that has long been known to cultivation in this country, for it had taken on considerable variety of colour in Parkinson's time—1629. Parkinson says: "The flowers were of divers colours, both single and double, as pure white and pale blush, almost like a white, and more blush, fresh and lively, of a rose colour; scarlet, and a deeper red like crimson, and dark red like black blood." Parkinson adds: "They will reasonably well abide the winter." This remark shows that our old author had an intimate knowledge of the plants he wrote about, for in severe winters they suffer to a certain extent. Seedlings that have not flowered generally pass through the winter very well, but named varieties will not be quite safe in the open garden. Like most flowers of this class, which have been brought to a high state of perfection, the work has been accomplished by the untiring energy of individual florists, who have been enthusiastic in their efforts to improve the plants. Mr. Charles Baron, a shoemaker of Walden, produced some very beautiful quite double flowers about fifty years ago. Messrs. Paul, of Cheshunt, carried

on the work so well begun by Mr. Baron Chater, of Saffron Walden, also produced some very fine varieties. Mr. John Laing, then at Dysart, now of the firm of John Laing and Sons, about forty years ago crossed the English varieties with high very double centres, and scarcely any guard-petals to the flowers, with the Scotch varieties, which had smaller centres and immense guard-petals. The result of this experiment was a considerable improvement on existing sorts.

Soon after these great improvements, the Hollyhock disease appeared, a fungoid growth (*Puccinia malvacearum*), which fastens upon the under-sides of the leaves, and quite destroys the softer part, leaving the naked venation, which is unsightly enough. There does not seem to be any cure for it. In certain positions in the garden no other flower is so effective as the Hollyhock, but it has not been so popular in recent years as it used to be, probably because of the difficulty in cultivating the plants owing to the disease. If a clean stock of Hollyhock plants can be obtained, say, in the autumn, they should be wintered in frames, and the pots plunged to the rims in coco-fibre or similar material. They are usually wintered in small-sized flower-pots, and in the spring repotted in 5in. and 6in. size. In April they may be planted out where they are to flower. The Hollyhock is a very gross-feeding plant, and requires a rich, deep soil. The ground ought always to be well-trenched and manured during the winter, and it is usually in good condition at planting time in the spring. Every practical gardener knows the importance of keeping the soil in good condition by trenching in the first place, and forking it over when dry enough at intervals.

It is a good thing when putting out the plants to have at hand a barrow-load of good prepared compost, such as is used in the potting-shed; a little of it should be placed around the ball of the roots, as the plants are turned out of the pots; this gives them a good start. A stout stick, standing some 6ft. out of the ground, will be required, and it is best to put the sticks into the ground at once and plant the Hollyhocks up to them, fastening the stems to the sticks at the same time, in order that they may be safe. The plants soon start into rapid growth, and must be fastened to the sticks as growth progresses. As soon as dry weather sets in, the plants should be freely watered, and some decayed manure placed around the base to prevent evaporation.

The Hollyhock fancier removes the lateral growths, so that the centre spike may be of splendid quality. These lateral growths are furnished both with eyes containing leaf-buds, and with flower-buds. The leaf-buds, if cut out and inserted in small pots in sandy soil, will produce nice young plants. They should be treated much as vine eyes are. The small pots should be plunged in a spent hot-bed, when the bud will, in a week or ten days, appear out of the soil. Great care must be taken in watering them at this stage, as they have considerable tendency to rot off; but as the plants advance in growth and form roots, they should be potted on into large "sixties," and in these they will pass the winter, but must be potted on in the early spring months.

Hollyhocks are also propagated in the spring by root-grafting, and by cuttings from growths obtained from the old stools. To obtain these the old plants should be lifted out of the ground in October, and planted in flower-pots from 6in. to 8in. in diameter; there is no need to over-pot them. The plants may either be wintered in a garden-frame or in a cool greenhouse, and in February or March the cuttings will be ready. Each one should be taken with a sharp knife close to the main stem of the plant, and potted in "thumbs" in sandy soil. If the soil is moist, and the cuttings are placed in the propagating-frame of a forcing-house, they will require little or no water until roots are formed, and an over-supply of water might cause most of them to rot off at the base. They will soon start into growth if they do well, and must, of course, be inured to a more airy place as soon as possible.

Root-grafting is merely the process of tying the shoot to a bit of Hollyhock root, after cutting the growth and the root much in the same way as ordinary whip-grafting of fruit-trees. Growths should be planted in small flower-pots, deep enough to leave the point of union just above the surface. These spring-propagated plants will flower rather later than those struck from eyes or in any other way in the autumn.

Propagation from seed is much the easiest way to raise a stock of plants, and, of course, it is always best to save the seed from the very best varieties. Such plants should also be cross-fertilised, for if this is not done the seedlings produce flowers differing very little from the parent plant, most of them inferior in quality, but some equally good, and very few of them better. If the seed is sown soon after it is gathered and dried, and the

plants are preserved through the winter in garden-frames, they will flower strongly the following season; but if the seed is obtained during the winter, it is as well to sow it in May or June, planting the seedlings, when strong enough, where they are to flower. Seedlings when planted out require exactly the same treatment as the named varieties.

In hot, dry seasons, the leaves of Hollyhocks become much damaged by red spider, which attacks the under-sides of the leaves. The best way to destroy it is to syringe freely, directing the water to the under-sides of the leaves. This may be done frequently by the use of clean rain-water, and the mechanical action of the water will dislodge the pest. Tobacco-water effectually destroys it.

VARIETIES.—Some of the finest kinds are here described.
Singles: Athelstane, claret-red; Langport Rival, crimson, with wavy petals; Little Dorrit, soft pink; Marjory, reddish-black; Rosy Morn, light rose. *Doubles*: Alba Superba, pure white; Aletha Smith, pink, buff tinted; Alfred Chater, mottled rose; Captain Cleveland, light rose; Carus Chater, reddish-crimson, large; Conspicuum, sulphur-yellow, tinged rose, and dark base; Coronet, buff; Cream of the Valley, cream; Crimson Queen, deep crimson, very fine; Duchess of Somerset, light rose; Emperor, rosy-pink; Exultim, blackish-maroon; Golden Drop, deep yellow; James Allen, deep claret; Mulberry Gem, reddish-mulberry; Ovid, bright cherry-pink; Purple Prince, deep purple; Vaquero, primrose; Walden Primrose, pale yellow, with chocolate base.

The following additional species and varieties may be useful to those requiring a wider choice than that given in the text:

Auriculas—Show

Green - Edged—CHAMPION, JOHN GARRETT, and TALISMAN.

Grey-Edged—COLONEL CHAMPNEYS, RINGLEADER, SILVIA, and WILLIAM BROCKBANK.

White-Edged—DR. KIDD, HEATHER BELL, PRINCESS MAY, RELIANCE, and TRUE BRITON.

Selfs—LORD OF LORNE, PIZARRO, REV. CHARLES KINGSLEY, SIR LANCELOT, and VULCAN.

Carnations—Tree

COMUS, white. JEAN SISLEY, buff-yel., with red suffusions. JULIAN, deep sc. PATROCLES, sc. PRIMROSE DAY, yel. SARDIS, pink. SCYLLA, pure white. SYLVANUS, purple.

URIAH PIKE, cr. WINTER CHEER, bright sc. ZENOBIA, buff-yel., edged cr.

— Show

Scarlet Bizarres—DUKE OF YORK, ROBERT MONK, and TOM POWER.

Crimson Bizarres—BRUCE FINDLAY, THADDEUS, and VIRGIL.

Pink and Purple Bizarres—MELODY, NIobe, PRINCESS BEATRICE, SARAH PAYNE, and SQUIRE PENSON.

Purple Flakes—ADA, BEAUTY OF WOODHURST, FLORENCE NIGHTINGALE, PURPLE GEM, QUEEN VICTORIA, and SQUIRE WHITBOURN.

Scarlet Flakes—ALISEMOND, BAILEY JUNIOR, CERES, HUNTSMAN,

Carnations—Show (contd.)

RICHARD DEAN, and SCARLET KEET.

Rose Flakes—MAID OF ATHENS, ROSAMUNDI, ST. GATIEN, and TROUBADOUR.

— Picotees—White Ground

Red-Edged—DR. EPHS, ISABEL LAKIN, J. B. BRYANT, MRS. DODWELL, PRINCESS OF WALES, and VIOLET DOUGLAS.

Purple-Edged—ADMIRATION, AMY ROBSART, BARONESS BURDETT-COUTTS, MARY, MRS. MAV, and ZERLINA.

Rose- and Scarlet-Edged—BEAUTY OF PLUMSTEAD, CHARLES WILLIAMS, EDITH D'OMBRAY, EUROPA, FAVOURITE, NORMAN CARR, PSYCHE, and VENUS.

— Picotees—Yellow Ground

EFFIE DEANS, ELDORADO, HARLEQUIN, HORATIO, MISS VIOLET, PRESIDENT CARNOT, THE GIFT, and XERXES.

— Malmaison

CALYPSO, soft pink, salmon centre. LADY GRIMSTON, pinkish-white, with bright rose; very fragrant. LORD ROSEBERY, deep rose; fragrant. LORD WELBY, deep cr. MARGOT, bright rose. NELL GWYNNE, pure white. TRUMPETER, deep sc.; sweet-scented.

Dahlias—Show

ARTHUR RAWLINGS, cr. COLONIST, chocolate and fawn. DUCHESS OF YORK, light yel., edged pink. DUKE OF FIFE, deep red. ECLIPSE, sc. GLOWWORM, sc. JAMES COCKER, purple. JOHN WALKER, white. MRS. GLADSTONE, pink. MRS. LANGTRY, cream, edged red. R. T. RAWLINGS, yel. WILLIAM POWELL, primrose. WILLIAM RAWLINGS, cr.-purple. YELLOW PET. ZELINDA, cr.-purple.

— Fancy

FRANK PEARCE, rose, cr. stripes. MATTHEW CAMPBELL, apricot, cr. stripes. MRS. J. DOWNIE, orange, sc. stripes. MRS. SAUNDERS, yel., tipped white. PEACOCK, maroon, tipped white. REBECCA, lilac, striped cr. REV. J. B. CAMM, yel., flaked red. T. W. GIRDLESTONE, lilac, flaked dark maroon.

— Pompon

ARTHUR WEST, cr. BACCHUS, cr. sc. DOUGLAS, dark maroon. E. F. JUNGKER, amber-yel. EMILY HOPPER, deep yel. EURYDICE, delicate pink, edged purple. GEORGE BRINCKMAN, white. HYPATIA, amber, shaded fawn. ISABEL, orange-sc. MARTIAL, cr. NELLIE BROOMHEAD, mauve, lighter ground. NERISSA, rose. PHÆBE, orange. WHISPER, yel., edged bronze.

— Cactus

ACHILLES, pale lilac. ADMIRATION, cr., tipped with white. ALFRED VASEY, amber, shaded pink. ARACHNE, white, edged cr. BERTHA MAWLEY, bright red. BRITANNIA, pale salmon, bronzy tint. CHARLES WOODBRIDGE, cr. CINDERELLA, purple. COUNTESS OF GOSFORD, yel., shaded cinnamon. CYCLE, ruby-red. DELICATA, pink. FANTASY, light red. FUSILIER, salmon-red. HARRY STREDWICK, maroon. LADY PENZANCE, yel. MRS. BARNES, primrose, pink shadings. MRS. WILSON NOBLE, salmon. REGULUS, rich cr. STARFISH, sc. TILLIE, salmon, pale rose shadings.

— Decorative

ARTHUR CHEAL, cr. AVALANCHE, white, tinted pink. CONSTANCE pure white. COUNTESS OF PEMBROKE, lilac. GLARE OF THE GARDEN, sc. MILLIE SCUPHAM, deep orange. MISS WEBSTER, white. MRS. HAWKINS, sulphur. THE QUEEN, pure white. YELLOW A. W. TAIT, pure yel.

— Singles—Selfs or Shaded

AMOS PERRY, velvety - maroon. ANNIE HUGHES, yel. at base, rosy-pink outer florets. DEMON, nearly black. DONNA CASILDA, deep orange, shaded rose, maroon ring at disk. GOLDENLOCKS, rich yel. MISS ROBERTS, clear yel. FOLLY ECCLES, satiny-fawn, cr. ring, yel. disk. ROSEBANK, cardinal red. THE BRIDE, white. W. C. HARVEY, orange-yel.

— Singles—Fancy

EMMIE, white. FOLLY, pale pink, margined bright red. FRED LESLIE, bright red. JACK SHEPPARD, yel., striped red. M.C.C., rich yel. NORTHERN STAR, red, edged deep buff. PHYLLIS, white, striped and flaked dark purple. VICTORIA, white, edged crimson.

Dahlias (contd.)—Singles—Tom Thumb

DAISY, cr. GOLDEN FAIRY, deep yellow. HOOP LA, dark maroon, yellow ring. MAUD, deep sc. MIGNON, pink.

— Singles—Cactus

ALICE LEE, pink and white. AMY ROBSART, sc. DANDIE DINMONT, yellow. LADY ROWENA, sulphur, shaded rose. MEG MERRILEES, yellow. SIR WALTER, rose, orange ring. THE ABBESS, white.

Gladiolus—Gandavensis

ADMIRAL WALLIS, brilliant cr. ALFRED HENDERSON, vermillion. ANDROMEDA, vel., lilac shading. BENJAMIN HARRISON, orange-cerise. BRANFORD, sc.-cr. CIVIS, rose-pink, striped violet. COUNTESS CRAVEN, rose, flaked car. DR. WOODMAN, salmon, flaked and blotched pink. DUCHESS OF EDINBURGH, purplish-rose, striped pink. JAMES KELWAY, cr., edged maroon. LORD W. BERESFORD, amaranth-purple. MRS. LANGTRY, white, tinged purple. MRS. WOOD, rich purple. PRINCESS ROYAL, pink, rose mottlings. SHIRLEY HIBBERT, purplish-cr. SIR EVELYN WOOD, bright cr. WILLIAM KELWAY, sc.-cr.

— Childsii

AUREA SUPERBA, orange - sc., mottled white. COLUMBIA, sc., flaked maroon. DOLOPS, orange-cr., flaked maroon. EARL CADOGAN, deep sc. KITCHENER, sc., striped yellow. MAJOR DICKIE, sc.-cr. TROS, sc., white lines. WM. FALCONER, pink, spotted cr. and white.

— Nanceianus

CARLTON, bright purple. COLONIAL SECRETARY, "c.", spotted. HALL CAINE, yellow, spotted. J. G. CLARK, salmon-rose on a cream ground. LORD CURZON, cerise, with yellow centre. MAURICE DE VILMORIN, dark blue, purple blotches. ROBERT BONNING, sc., white centre.

— Lemoinei

ABIA, cream, with yellow lip. BEAUTY, white, violet spotted. EPEUS, orange-

red, spotted. HOLLAND, soft pink, car. spotted. HORA NOVISSIMA, pink, red spot, yellow lip. MAGENTA KING. SANT, deep yellow. XENIA, rosy-lilac and yellow, dark blotch.

Pansies—Fancy

ANDREW STRUTHERS, CONSTANCE STEEL, DAVID G. M-KAY, JEANIE R. KERR, JOHN ROBERTSON, LORD SALISBURY, MISS STIRLING, MRS. J. CURRIE, 'MRS. M. CUTHBERTSON, MRS. W. STEELE, PRINCESS, and SIR JOHN WATSON.

— Show

AGNES KAY, ALEX. BLACK, ALLAN STEWART, A. ROLLAND, BESSIE SMELLIF, BOBBY HARPER, BUSBY BEAUTY, CO. STIRLING, DR. INCH, G. C. GORDON, GRACE DARLING, J. E. MARTIN, LILYBANK GEM, MAGGIE BENSON, MARY MITCHELL, MRS. WILSON, and ROBERT M. WENLEY.

Picotees. See "Carnations."

Ranunculus—Persian

COMMODORE NAPIER, yellow, tipped purple. FIREBALL, sc. MONT BLANC, white. QUEEN CAROLINE, white, striped pink.

— Turkish

GRANDIFLORA, pink. ROMANO sc. SOUCIS DORÉ, orange. VIRIDIFLORA, orange-sc., green centre.

Violas

A. J. ROWBERRY, deep yellow, rayless. ARCHIBALD GRANT, deep blue. BORDER WITCH, pale blue. BUTTERFLY, white, edged rose, with rosy-pink upper petals. COLLEEN BAWN, white, laced purple. COUNTESS OF KINTORE, deep purple, edged white. CROWN JEWEL, dark purple, edged white. HAMLET, a combination of purple, dark brown, and bright orange. JEANIE P. ROBERTSON, white, edged blue. LAVENDER KING. LUCILLA GOLD, pure white, edged deep mauve. NORAH MAY, silvery-white, pale blue rays. ULIDIA, white, edged mauve. WHITE EMPRESS, pure white, rayless.

CHAPTER II.

ROSES.

Choice of Stocks—Methods of Propagation—Suitable Manures—Arrangement for Effect—Popular Sections of Roses, and Methods of Pruning—Exhibition Varieties and their Treatment—Insect and other Pests—Selected List of Varieties.

IN the whole of the Floral World there is no plant so widely grown and so much admired as the Rose, which justly merits the title of “Queen of Flowers” bestowed upon it. No garden is complete without it, and its character is so accommodating that in hot or in cold positions, and in all sorts of soils, some of the many species and varieties will thrive and produce fragrant and beautiful flowers. Quite a mass of literature has been published on this favourite flower; but here it is only intended to deal with the most prominent, and useful kinds, describing, concisely, their culture, and the purposes for which they are most suitable.

CULTIVATION.—Propagation may be effected by means of seeds, cuttings, and budding; while, occasionally, grafting is practised; but the first-named methods are the best and most trustworthy.

Seeds.—Not only are stocks raised from seed, but likewise many of the hardy and common kinds, like *Rosa rugosa*. New varieties, in many instances, have originated from seedlings, and by careful hybridising much more will probably be done to introduce further sterling sorts. Birds are particularly fond of the hips, and as these must be quite ripe to obtain good seed, it will, in some districts, be necessary to cover the bushes with nets to protect them. Immediately the seeds are ripe they should be sown in pans or boxes that are well-drained and filled with a light, rich, sandy soil, covering them lightly with compost, giving a good watering, and placing the pans or boxes in a gentle heat. At one time germination will quickly

follow ; at another it may be months before it takes place, and therefore in such cases it is advisable not to be in any hurry to throw away the contents of the boxes. In the spring, the seedlings may either be planted out in nursery-beds, about 12in. apart, or potted separately into "sixties," and afterwards potted on as often as may prove necessary, to be finally planted out in October.

Cuttings.—All Roses root freely from cuttings if put in at the proper season, and the most certain and best time is when the wood is about half-ripened. Young wood about 5in. or 6in. in length, taken with a heel, and with only the lowest leaf removed, put in firm, sandy soil, 2in. or 3in. deep, in a close frame or hand-light, and kept shaded from the sun, will root very quickly, and make nice plants before winter. Another mode is to put the cuttings in a house or frame with a nice bottom-heat, keeping them moist and shaded. These form roots more rapidly than those put in a cold close frame or hand-light. When the rooting process is completed air should be admitted and gradually increased until the plants will bear full exposure. If the plants are wanted for forcing purposes, they should be potted, and grown on vigorously for a year or so ; their strength will thus be increased, and a moderate supply of fine flowers will be produced. Another method is to put in cuttings in October, or immediately after all the foliage has fallen, placing them in firm, sandy soil, in a shady position, and covering with a frame or hand-light. These cuttings may be 6in. or 8in. long, and inserted about half their length, and, unless the winter is exceptionally severe, a good proportion will grow and form roots in the following spring. They should be taken with a heel.

Stocks.—Very much in favour of the Rose on its own roots could be said, as, for instance, the absence of suckers, and the growth from below the surface after all wood above the soil has been killed by a severe winter ; but as the process is too slow in many cases, and not always the best in others, a consideration of what really are the best stocks may be useful. Where vigour is required there is no question that the seedling Briar, or common Dog Rose, is the best, and many nurserymen now largely employ this stock, alike for standard, half-standard, climbing, and bush Roses. In the winter months, men collect stout, vigorous Briars, of suitable growth, from the hedgerows, and sell the stocks thus obtained to nurserymen. These are planted in good ground, and budded the following season. As

a rule, those stocks with the largest thorns and hooked downwards are the best, making the most vigorous growth, and bearing the finest flowers; and further, they have the longest life. Some of the Briar stocks are covered with a multitude of short, sharp prickles; these are seldom satisfactory for many years, and do not produce good flowers, or very many in quantity.

For dwarf plants, to be grown in beds out in the open, or in pots or beds under glass, there is considerable difference of opinion as to whether the Briar or the Manetti is the better stock. After many years' trials of the two kinds, both under glass and outside, it has been forced upon us that the Briar is the better, producing more vigorous and floriferous plants, as well as cleaner and finer flowers than plants similar in age and treatment worked upon the Manetti. In winters of extraordinary severity the Briar is much hardier, and is rarely killed outright, while whole beds on the Manetti have been absolutely destroyed. No doubt some few varieties do succeed better on the Manetti, but, as a general rule, the Briar, or common Dog Rose, particularly if seedling Briars, is the best stock for Roses generally, in whatever form they may be grown and cultivated.

Budding.—This interesting operation should be performed at the end of June, or as early in July as possible, when the bark will lift readily, or "run" from the wood. A very good test is to try if the prickles will break off freely without pulling away any of the bark; if so, the bark, as a rule, will be raised easily from the wood. The same rule also applies to the wood and bark of the Rose from which the bud is taken. The bud should be plump, and the wood fairly hard and mature. With a sharp knife cut out the shoot, with about $\frac{1}{2}$ in. of bark above and below the bud (Fig. 19, A), and not quite half-way through; then gently detach or draw out the wood from the bark (Fig. 19, B), and insert at once on the stock in a T-shaped cut under the bark, tying it firmly with raffia or matting to bind the bark of the stock over that of the bud. Showery weather is the best for all budding operations, as not only is there a full flow of sap, feeding the bud and keeping it plump, but the shade more or less present in such weather is



FIG. 19.—A, BUD WITH WOOD INTACT; B, BUD WITH WOOD REMOVED.

far more favourable to a union than hot, dry weather and blazing sun-heat. If the buds begin to grow and form shoots, the ties should be loosened to allow of the natural swelling that is taking place; but if the bud does not start, the ties need not be interfered with.

Other methods of propagation are by layers, by division, and by suckers, but neither of these can be recommended.

SOIL.—Although the Rose will grow practically everywhere, good drainage is essential to get really healthy plants and the best results; therefore, if the soil is not porous, or is water-logged, the defects should be remedied by the addition of sand, road-scrapings, or similar material, while drains ought to be put in to carry away any excess of water at the roots. A good, rich, and rather heavy loamy soil is excellent for all classes of Roses, but, unfortunately, such ground is far from being always available; consequently, the best use must be made of the soil at hand. If the soil is naturally sandy or gravelly, and quickly parts with moisture, the addition of clay or marl, and manuring with cow-dung, will prove highly beneficial. On the other hand, if it is very heavy and tenacious, strawy-manure and other ingredients that will make the soil more open in texture is advisable, trenching the ground 2ft. deep when adding the above. This should be done some little time before planting, viz., in August or September, and the planting should be completed by the middle or end of October. If Roses are planted at the time mentioned, they root at once, and become semi-established, bearing a good crop of fine flowers the following year; the only exception is in very cold exposed positions or situations. Tea and Hybrid Tea Roses should not be planted in October, but at the end of February. If planted at the first-named season, and a hard winter follows, they would most probably succumb to the frost, and the cost and labour of planting would be wasted. If the soil is good, and has been manured well some time prior to planting, no manure should be placed with the soil that comes in direct contact with the roots; but if the ground is hungry and poor, and has not been enriched for some time, a little thoroughly-decayed manure mixed with the soil is beneficial. On no account should raw fresh manure be mixed therewith when planting, or come into contact with roots, as it would act like poison to them. If the planting is done in the autumn or early spring, a mulch of strawy-manure is always advisable, as it acts as a protection against frost in winter and drought in

summer; it also acts as a gentle fertiliser, and encourages the roots to keep near the surface.

MANURES.—The question of manures is a somewhat vexed one, but all good growers acknowledge that one must be guided by the soil and the situation. On light soils of all kinds it will be found that basic slag, at the rate of 2oz. to the square yard, is not only fertilizing, but also renders the soil denser and more holding in character. The effect is not so apparent in the first as in the second year, and for that reason it is advisable to apply a dressing immediately the planting is done. Another very fine manure for Roses on both heavy and light soils is 2oz. of superphosphate to each square yard, applied at the end of March. This manure produces a sturdy, floriferous growth, with much substance in the flowers. If the soil is very light, muriate of potash may be added, at the rate of $\frac{1}{2}$ oz. to each 2oz. of superphosphate. On sandy soils resting on gravel, kainit is excellent if applied at the end of April or early in May, at the rate of 2oz. to 3oz. per square yard; this manure not only fertilises, but also retains moisture in the soil all through the summer months. On heavy soils few manures are equal to a liberal application of fine bone-meal, say at the rate of 3oz. to each square yard, and very lightly pricking this in with a fork early in April, or immediately after the Roses have all been pruned.

Farmyard manure is well known as a complete plant-food, especially if it is from different kinds of animals, and is all mixed together in a heap, where it is not exposed to the action of the weather. A mulch of this applied about 3in. thick just after pruning is of great value, not only for the food supplied, but also for conserving moisture during the hot summer months. Liquid manure in a diluted form is one of the finest stimulants to Roses, especially for the production of exhibition flowers, but sewage is not so beneficial, being apt to induce mildew and other evils. A good pure guano (using 1oz. to each square yard of surface) is also of immense service in developing fine blossoms for exhibition or in giving a great crop; but, like all concentrated manures, it must be used with caution, and not allowed to fall on the shoots or foliage, or burning will follow.

ARRANGEMENT.—Although Roses are such universal favourites, and excite more admiration than any other hardy flower, we frequently see them planted with an utter disregard to

effect or suitable position. One of the commonest mistakes is planting Roses in beds mixed with trees or shrubs; in most cases the more delicate Rose simply drags out a miserable existence. The old vigorous climbing Roses do succeed admirably amongst shrubs, but to expect Hybrid Perpetuals, Teas, and some of the dwarf-growing ones to answer is not quite reasonable.

Another mistake is overcrowding both dwarfs and standards, an error frequently fallen into by amateurs. They may appear to have plenty of space at the time of planting, but in the course of a year or so it is found that the growth is very congested and interlaced, when it is impossible for it to get properly matured; and if a hard winter follows, the major part of the plants are killed. Insect pests and fungoid attacks are also encouraged by thick planting, and are, moreover, extremely difficult to eradicate under such conditions.

In many gardens there is a border with a background consisting of a wall, fence, or living hedge, and, providing the border is of fair width, say 6ft. to 10ft., nothing could be better for producing a fine effect. If a wall is at the back, fruit-trees can be grown thereon in the usual manner, and about 3ft. from the wall can be planted climbing Roses, trained up rustic stakes, at a distance of 10ft. to 15ft. apart, selecting such varieties as Crimson Rambler, Fortune's Yellow (Syn. Beauty of Glazengow), the Dawson Rose, a vigorous variety bearing great bunches of pink flowers, Alister Stella Gray, a charming yellow variety and an abundant blossomer, and Thalia, a lovely white Rose. All these do famously on poles or long stakes. If more varieties are required, almost any of the climbing sorts will answer. Between these climbing Roses tall standards may be planted, and if these have somewhat weeping heads, they will present a lovely appearance when in blossom. Most of the moderate-growing climbing varieties lend themselves admirably to this method of culture, and flower profusely. The back row being thus composed of tall plants, the next row may be made of half-standards and the more vigorous-growing varieties in bush form, planting them alternately at a distance of 4ft. apart, with a judicious arrangement as to colour, and selecting those that are well known to be free-flowering amongst Hybrid Perpetuals, Hybrid Teas, and strong-growing Teas. The front of the border can be filled with a good selection of dwarf Teas and Hybrid Perpetuals, and

if, as stated, the colours of the flowers are nicely blended, such a border will prove one of the entrancing features of the garden, affording a continuous succession of flowers from early summer until late autumn; in fact, Roses will be to the fore until the end of October, or early in November in many seasons.

Where a large border similar to the above is out of the question, and beds on grass have to be relied upon, there is nearly always the risk of overcrowding, because, as the space is so limited, an attempt is usually made to get in as many fine varieties as possible, and thus overdo it. In every such case it is advisable to put in the plants not closer than 3ft. apart each way, allowing each 18in. from the side of the bed or verge. Unless the varieties are very vigorous, this will not make a very crowded bed.

Magnificent effects are produced by planting strong-growing sorts like *Gloire de Dijon*, *Mrs. Paul*, *Cheshunt Hybrid*, *Climbing Souvenir de la Malmaison*, *W. A. Richardson*, *Celine Forestier*, *Crimson Rambler*, and many others. If these are allowed to make long shoots, and in the spring the beds are liberally manured, and the shoots pegged down their full length or nearly so, they will throw out growths at almost every eye the whole length of the stems, and produce a really splendid mass of colour. The beds may be all of one colour, which seems most popular in many gardens, or they can be arranged to afford a combination of colour. In the latter case care must be exercised in pegging down the shoots, so that when in flower the colours produce the desired effect. A little carelessness in the pegging-down of the shoots will mar what would otherwise be a really glorious appearance when in full blossom.

Arches or arcades of Roses in gardens have a charm that has found more favour in the past than at present. The covering of arbours with Roses was far commoner years ago, and the plan might very well be adopted again now. In the hot summer months these Rose-covered arches or arbours are delightful, and one of the most frequented parts of the garden. That capital variety, *Crimson Rambler*, is a gem for such positions, as it revels in places where the air can play freely all round it. *Aimée Vibert* and *Rêve d'Or* are also excellent arch Roses, and there are many others.

In case any of the varieties of Teas are thought to be tender, and unable to stand the rigour of our winters, common bracken

fern tied in the heads of standards early in winter, and removed in spring, will afford the needed protection. With dwarfs it should be thrown lightly on the plants, but removed in mild weather, if it is seen that growth is commencing prematurely. As a matter of fact, however, Tea Roses have been greatly improved during the last ten years or so, alike as regards constitutional vigour and colour range. They may, therefore, be freely planted, especially when obtained from a trustworthy source where they have been worked out of doors. Taken all round they have no superiors in the large genus to which they belong, as, long after the majority of Hybrid Perpetuals have ceased to charm, Tea Roses are giving of their best—in late autumn. For fragrance, again, the Teas and the Hybrid Teas are without superiors; while they are far less susceptible to the much-dreaded forms of mildew than are the Hybrid Perpetuals.

Tea Roses (*Rosa indica odorata*).

These richly-scented and lovely flowers are justly appreciated wherever grown, and, fortunately, are more fully understood, and more extensively planted, than they have been in the not very distant past. They were first introduced from China in 1810, and termed Tea Roses, by reason of their tea scent. For convenience, the class may be divided into two sections, Dwarf and Climbing, the Hybrid Tea class being dealt with under a separate heading.

Taking the Dwarf section first, we have some glorious varieties for either planting in beds or forcing under glass. When planted in beds, pruning should be hard, *i.e.*, the young shoots ought to be cut down nearly to their base about the end of March or early in April, and the beds mulched with some good farmyard manure. No further attention will be necessary beyond keeping down insect and fungoid pests, and the removal of decayed flowers. Attention to these points will ensure a continuance of blossom from early in June to the end of October. Early in November, the centre of the plants ought to be covered with cocoa-nut fibre to the depth of 6in. The material will serve to protect the heart from injury by frost, though all growths above the covering material may be killed. This protecting material should not be removed until the time arrives for pruning, as late frosts of sufficient severity may

come that would seriously cripple, if not kill, the parts that had been protected all the winter.

If very fine flowers for exhibition are required, the buds must be thinned to one flower on each shoot, and all very weak wood cut out. Extra fine blossoms are thus obtained, but if quantity of flower is desired, there is no necessity to thin the buds.

In the following list of varieties, a brief description of the merits of each is noted, not only as regards the colour of the flower, but also as to habit, suitability for bedding, and other pur-



FIG. 20.—ROSE CATHERINE MERMET.

poses. Alba Rosea (Syn. Madame Bravy), flowers white, with pink centre; moderate vigour. Andre Schwartz, red; the plant forces well, and is very vigorous. Anna Olivier, beautiful flesh colour; fine habit; excellent for beds or exhibition. Bridesmaid, deep

pink ; a magnificent variety for all purposes ; very vigorous. Catherine Mermet (Fig. 20), soft rose; one of the very best ; a free and strong grower. Comtesse de Nadaillac, flesh colour, blended with apricot-yellow ; large and fine form, and sturdy growth. Devonensis, white, shaded with yellow ; fine form, and suitable for all purposes. Dr. Grill, rose, shaded with bronze ; a splendid variety for bedding. Elise Fugier, lemon-white ; very pretty ; good for forcing, bedding, and exhibition. Ernest Metz, salmon-pink ; a grand flower, and the plant of good habit. Ethel Brownlow, salmon-pink ; vigorous grower, and very floriferous. Etoile de Lyon, sulphur-yellow ; excellent for beds or pots. François Dubreuil ; this is considered the best crimson Tea in cultivation. Francisca Kruger, bronzy-yellow ; a very fine variety for either indoors or outside. Golden Gate, pale orange ; good form ; effective for beds. Hon. Edith Gifford, white, tinted with pink : splendid variety in all respects. Innocente Pirola, light fawn ; beautiful flowers, of vigorous habit. Jean Ducher, yellow : large blossoms of good shape ; fine for beds or forcing. Madame Hoste, pale lemon ; remarkably free flowering, and of good habit. Marie Van Houtte (Fig. 21), yellowish-white, tinted with rose ; a large and lovely variety ; vigorous. Niphatos (Fig. 22), a splendid white of fine form ; it forces well, and is one of the best for growing under glass. Perle des Jardins, canary-yellow ; a very fine flower, of sturdy habit. Souvenir de S. A. Prince, pure white ; a large, massive flower, and an excellent grower. White Perle, white ; very floriferous, and excellent for bedding.



FIG. 21.—ROSE MARIE VAN HOUTTE.

Climbing Tea Roses.

In every garden these are almost always found in some form or other; their suitability for training against walls, up pillars, over arches, and also up the roofs of glass-houses, and for other purposes, has given them a position from which it is improbable that they will ever be displaced. Occasionally complaints are heard that climbing Tea Roses which have been planted against the walls of a house refuse to grow. In the majority of instances this is caused by the projecting eaves of the house throwing off all moisture, the roots thus becoming almost dust-dry. In such cases copious supplies of water should be

given during the summer months, until the roots have extended sufficiently wide to be able to dispense with this assistance. Another cause of failure is the exhaustion of all plant-food available for the roots. In the open beds the plants are mulched with rich manure, but this is rarely done with trees trained against the walls of a residence, nor is it desirable, as the manure would be unsightly; but diluted

liquid manure can be given freely early in the morning, and any unpleasant smell will have passed away before the family are about. A very good manure, devoid of all objection-

able smell, is 2oz. of superphosphate, 2oz. of fine bone-meal, and 1oz. of nitrate of soda, applied early in May, to each square yard; this will act beneficially on both growth and flowers.

With climbing Tea Roses, hard pruning is not advisable; all the strong, vigorous shoots should be allowed to remain nearly

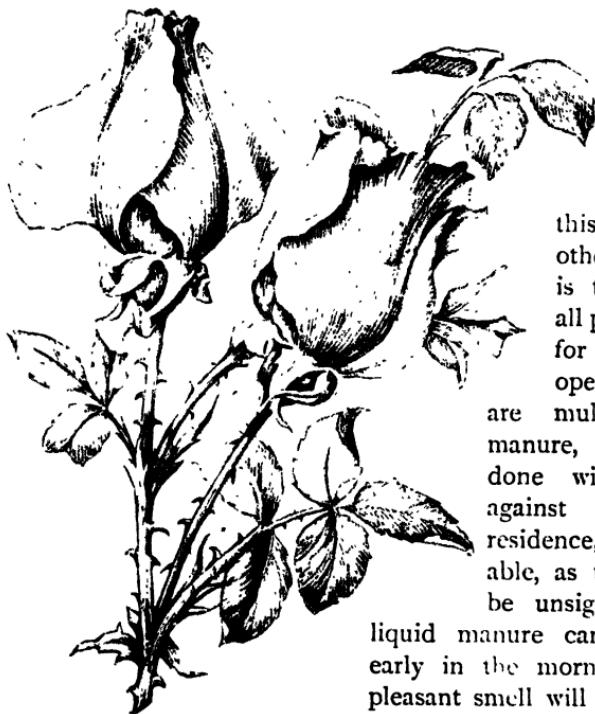


FIG. 22.—ROSE NIPHETOS.

their full length, and if bent in the form of an arch every bud will start into growth, and produce one or more flowers. All weak wood should be cut out, and any congestion of growth prevented by so arranging the wood that each shoot has room for proper development.

The varieties enumerated here are a few of the best, and are practically sure to give satisfaction wherever planted. Belle Lyonnaise (Fig. 23), deep lemon; a free and vigorous grower. Climbing Devoniensis, white; a very strong grower; excellent. Climbing Niphетос, pure white; a rampant grower; a great acquisition. Dr. Rouges, deep red; pretty in the bud state; of vigorous habit. Gloire de Dijon, yellow, shaded with copper; an old favourite, and still one of the best. Henriette de Beauvau, yellow; very floriferous, and of free habit. Madame Berard (Fig. 24), pale salmon; a grand late season variety. Monsieur Desir, crimson-red; well worthy of a place for its colour; vigorous.



FIG. 23.—ROSE BELLE LYONNAISE.

Hybrid Tea-scented Roses.

This section might be termed a new one. It has been evolved by crossing the Tea and Hybrid Perpetual Roses, and a magnificent and valuable class has resulted. In some cases the progeny have a preponderance of Tea character and perfume, and in others the Hybrid Perpetual parentage is more marked; but in all the varieties there is considerable merit, the majority being hardy, robust, and floriferous. Planting may be done in October, as already advised, but it is safer to defer it until February, and the trees should be mulched to promote good health and vigour. Pruning will depend to some extent on the

variety. For instance, Cheshunt Hybrid, being a climber, should not be pruned much, but be treated as climbers usually are; while such a variety as La France (now classed in this section) may be cut back rather severely if very large blossoms are desired.



FIG. 24.—ROSE MADAME BERARD.

Some of the finest bedding Roses are included in this class, and though some of the varieties have loose open flowers when fully expanded, they are so handsome in the bud state, and produce such a great quantity of flowers, that the beds are really

a very attractive feature in the garden. If planted in separate or mixed beds, 2 ft. each way between the plants will prove a suitable distance, taking care to have the tallest-growing varieties in the centre of the bed, and the dwarfer ones at the margins. This not only makes it easier to get at the plants, but also shows off their beauty better than if a tall plant is growing in front of a dwarf one.

There are a comparatively large number of varieties, and the following are a few that can be strongly recommended : Belle Siebriecht (Syn. Mrs. W. J. Grant), rosy-pink :

fine form ; hardy and free. Camoens, clear rose : fine for beds, or useful as a bush.

Captain Christy, flesh colour ; very large, hardy, vigorous, and a good bedder. Caroline Testout, rosy-salmon ; of fine form ; large and floriferous. Cheshunt Hybrid, cherry-carmine ; climbing ; excellent for screens or for pillars.

Climbing Captain Christy ; a very vigorous and hardy form of Captain Christy. Climbing Kaiserin Augusta Victoria, white ; a splendid variety that promises to be a great acquisition to the climbing Roses. Denmark and Duchess of Albany are two distinct forms of La France, the former being remarkably dwarf, and the latter darker in colour.

Grace Darling, white, shaded with rose ; a magnificent variety for bedding, and very floriferous. Grand Duc de Luxemburg, bright pink ; this is another fine Rose for bedding, being free, hardy, and vigorous. Kaiserin Augusta Victoria, white ; a splendid flower ; free and good. La France (Fig. 25).



FIG. 25.—ROSE LA FRANCE.

soft pink; a well known and indispensable favourite. Madame Pernet Ducher, yellow, tinged with a darker shade; this variety will become popular for bedding; vigorous habit. Marquise de Salisbury, red semi-double flowers; a useful bedding variety. Reine Marie Henriette, deep carmine, buds long, pointed, and handsome; a valuable climbing variety. Souvenir de Madame Eugene Verdier and Souvenir de Madame Carnot are two creamy-white flowered varieties of exceptional merit, and worthy of a place in every garden, being vigorous, hardy, and free-flowering.

Exhibition Roses.

With Roses for exhibition a good soil suitable for the growth of the plants in a vigorous state is essential; if the land is naturally unsuitable it must be improved. A good sound loamy soil, rather heavy in character, is admirable, if well drained, for all classes; but for Teas the soil may with advantage be made somewhat lighter. Again, the situation ought to be quite open, and fully exposed to the benefits of solar influences. It should be also far enough away from large forest trees to prevent shading, or robbery of plant-food by the roots of such. If planted within reach of these, their roots take possession of the bed or soil prepared for the Roses, and rapidly absorb the elements of plant-food to the detriment of the Roses, while any manures applied afterwards are simply wasted, as the roots of the trees quickly seize it, and aggravate the evil.

There are various opinions as to the best stocks for the production of exhibition Roses; the general one seems decidedly in favour of the seedling briar for all sections. The Manetti is very suitable for a few varieties, as for instance, vigorous-growing sorts in the Hybrid Perpetual section, and also for a few of the Hybrid Teas. In the former section may be included the following, as succeeding well on the Manetti when budded below the ground level: Abel Carriere, Annie Wood, Baroness Rothschild, Beauty of Waltham, Centifolia Rosea, Countess of Rosebery, Duchess de Morny, Duke of Connaught, Etienne Levet, Francois Michelon, John Hopper, Madame Victor Verdier, Pride of Waltham, Senator Vaisse, Ulrich Brunner, and Violette Bowyer. Amongst Hybrid Teas that answer on the Manetti are: Camoens, Captain Christy, Cheshunt Hybrid, Clara Watson, Grace Darling, La France, and Viscountess Folkestone. Most of the Rose specialists in the trade sell the varieties on the

particular stock on which they succeed best, experience having taught them which varieties require a particular stock.

To have flowers up to exhibition form young plants are essential. These should be free in growth, clean, and judiciously fed when the buds are formed, to give size of flower and petal, with good substance and perfect colour. Diluted liquid manure from the farm-yard, or 1oz. of good guano dissolved in 1gall. of water, has an immediate beneficial influence. Should the weather be showery, 1oz. of guano and 1oz. of superphosphate, applied to each square yard, will quickly give assistance to the plants. 1oz. of sulphate of ammonia dissolved in 2galls. of water aids materially in giving a good colour to the foliage and flower; but over-feeding must be avoided. Once a week will be often enough to apply any one of the above manures, which should be varied weekly. The early thinning of the buds is also of much importance. All buds, except one on each shoot, should be removed, retaining only the finest. It is a waste of energy and power to allow the flower-buds to swell to say half their normal size, and then cut away the surplus ones. To some extent it must reduce in quality the bud left; it may be only a little, but when competition is close a very slight superiority in size and colour will give the winning points.

All the most successful exhibitors pay the strictest attention to detail in culture and management, and also exercise good taste in the arrangement of colour, &c., when staging the blossoms. A flower to be fit for exhibition should possess size, perfect form, rich colour, and be quite fresh. A flower that is somewhat stale in colour, has damaged petals, or an open eye, is a great mistake in competitions. A few such in a really good collection mar its appearance, and greatly minimise the exhibitor's chance of winning a prize. Much again depends upon the time of cutting the flowers for exhibition. The early morning is by far the best time, as the flowers are then fresh, moist, and keep their shape and beauty considerably longer than if cut in the middle or afternoon of the day, as the petals are then liable to expand, and the flower often becomes loose after cutting. An excellent plan, adopted by many growers and exhibitors to keep the flowers fresh and good in form, is, immediately they are cut, to tie a soft piece of worsted or wool carefully round the flower-bud. This band or tie should not be tight, but simply passed once, or perhaps twice, round to keep the petals together and prevent further expansion.

of the flower. Such ties remain until the last moment before leaving the exhibit for the judges. If tied with a loop, a large stand can be cleared of the ties in a few minutes. It need scarcely be stated that the flowers should have their stems placed in water at once after cutting, and be kept as cool as possible; and when at the exhibition tent or hall the coolest spot available should be chosen to give the final touches up. Good taste in the arrangement of the colours and the setting up of the flowers always carries weight with the judges, and if the stand cannot be covered with nice green moss, it should be painted a pleasing green; but moss always is best if clean, fresh, and green. If the flowers are cut with long stems and good foliage, they appear to much greater advantage than if dumped down close to the stand. When raised a few inches the size and symmetry of the flower are fully seen and appreciated by the judges, whereas a flower close to the board has much of its beauty and form hidden.

The undermentioned varieties are excellent for exhibition, and are those most frequently seen in prize-winning stands.

HYBRID PERPETUALS.

Alfred Colomb (Syn. Marshal P. Wilder), rich carmine-red.	Fisher Holmes, bright scarlet.
A. K. Williams, bright reddish-crimson.	François Michelon, silvery-rose.
Abel Carriere, deep dark maroon.	General Jacqueminot, brilliant velvety-red.
Baroness Rothschild, light pink or flesh colour (Fig. 26).	Gustave Piganeau, rosy-crimson.
Beauty of Waltham, rich rosy-crimson.	Her Majesty, flesh colour; a shy blossomer.
Captain Hayward, bright carmine-crimson.	Jeanne Dickson, rosy-pink.
Camille Bernardin, light crimson.	John Hopper, rich rosy-crimson.
Charles Darwin, rich bronzy-crimson.	I.e Havre, vermillion-red.
Charles Lefèvre, brilliant red, shaded with purple.	Madame Eugène Verdier, light silvery-rose.
Comte de Raimbaud, splendid crimson.	Madame Gabriel Luizet, silvery-pink.
Comtesse d'Oxford, fine carmine-red.	Marchioness of Dufferin, rosy-pink.
Countess of Rosebery, soft carmine-rose.	Marchioness of Londonderry, ivory-white.
Dr. Andry, bright red.	Marie Baumann, crimson-red.
Dr. Hogg, deep violet.	Mrs. John Laing, beautiful soft pink.
Duchess de Morny, silvery-rose.	Margaret Dickson, splendid white.
Duke of Connaught, rich velvety-crimson.	Paul Neron, deep rose; immense size.
Duke of Edinburgh, brilliant vermillion.	Prince Camille de Rohan, dark crimson-maroon.
Duke of Teck, light crimson.	Senateur Vaisse, deep red.
Duke of Wellington, vivid crimson.	Star of Waltham, rich carmine.
Dupuy Jamain, rich cherry-rose.	Suzanne M. Rodocanachi, silvery-rose.
Earl of Dufferin, velvety crimson.	Ulrich Brunner, cherry-crimson.
Etienne Levet, pale carmine-red.	Victor Hugo, crimson red.
E. Y. Teas, rosy-crimson.	Victor Verdier, cherry-rose.
	Violette Bouyer, white; a fine variety.
	White Baroness, pure white.

HYBRID TEA-SCENTED ROSES.

Belle Siebriecht (Syn. Mrs. W. J. Grant), rich rosy-pink.	La France, silvery-rose (Fig. 25).
Captain Christy, light salmon-flesh.	Madame J. Finger, creamy-white.
Caroline Testout, lovely rosy-salmon.	Marquis Litta, rosy-carmine.
Kaiserin Augusta Victoria, white; a splendid acquisition.	Mrs. C. Whitney, deep pink.
Lady Mary Fitzwilliam, rosy-pink; a rather weak grower.	Pink Rover, beautiful pale pink.
	Souvenir de President Carnot, creamy-white.
	Viscountess Folkestone, silvery-pink.

TEA ROSES.

Bridesmaid, pink; an improved Catherine Mermet.	Jean Ducher, pale salmon.
Caroline Kuster (Noisette), lemon-yellow.	Jules Finger, silvery-rose.
Catherine Mermet, pale flesh colour; one of the very best (Fig. 20).	Madame Cusin, rosy-purple.
Cleopatra, pale pink.	Madame Hoste, creamy-white.
Comtesse de Nadaillac, rich flesh colour.	Maman Cochet, pink, shaded with yellow.
Devonensis, white, faintly tinged with yellow.	Marie Van Houtte, creamy-white (Fig. 21).
Elise Fugier, lemon-white.	Muriel Grahame, pale cream, flushed with rose.
Ernest Metz, salmon-pink.	Niphетос, beautiful white (Fig. 22).
Ethel Brownlow, salmon-pink.	Perle des Jardins, rich straw colour.
Etoile de Lyon, sulphur-yellow.	Souvenir de Gabrielle Drevet, whitish-salmon.
Francisca Kruger, bronzy-yellow.	Souvenir d'un Ami, salmon-rose.
Hon. Edith Gifford, white, lightly tinged with rose.	Souvenir de S. A. Prince, grand pure white.
Innocente Pirola, pale fawn.	The Bride, a white sport from Catherine Mermet.

Banksian Roses (*Rosa Banksia*).

These distinct Roses were introduced from China early in this century, and named after Lady Banks. As a class they are strong-growing, but not quite hardy in the north. They are semi-evergreen in mild winters.

Good plants of Banksian Roses are always much admired, but unless the situation is warm, and the soil well drained, they are not a success. Given these conditions, however, and planted in March, they will make rapid growth, and in three or four years prove all that could be desired. The Yellow or Lutea variety is the most free blossoming, and is probably much the best of the few varieties known. The White or Alba variety is equally as free and vigorous as the Yellow one, but it seldom, if ever, blossoms so profusely. Very little pruning is necessary; the weak wood, exhausted flowering shoots, and any unripened wood are all that need be removed. When once the plants are established, liquid manure, diluted, given during dry weather, is beneficial, taking care to thoroughly saturate the soil for some considerable depth and width, as mere driplets do more harm than good.

Hybrid Perpetual Roses.

There is no record of the origin of this class, but it seems certain that it originated by hybridising several species or strains, followed by careful selection. The name "Perpetual" was given because of their blossoming all through the summer.

Opinions differ, and probably will continue to differ, as to the best form in which to grow these brilliant Roses—standards, half-standards, or bush. All have strong advocates, and grow high-class flowers. The half-standard is perhaps the best for general purposes, being easy to examine, vigorous, and sufficiently high to prevent splashing of the blossoms by heavy storms. Some of the varieties are excellent for growing in bush form, and if planted widely apart, the long shoots, instead of being cut or pruned hard, may be left almost their full length,

and pegged down to the soil. In this way a mass of flower is obtained, and although the blossoms are not of exhibition form, they are first-rate for garden decoration or cutting. Standards and half-standards must be rather severely pruned, not only to keep the heads within reasonable bounds, but also to ensure really fine blossoms. In the first place, all weak wood or shoots that cross each other or grow towards the centre ought to be cut out: such wood obstructs light and makes the head a tangled mass. Two or more buds may be left at the base of each shoot when pruning,



FIG. 26.—ROSE BARONESS ROTHSCHILD.

according to variety, as, for instance, weak-growing ones should be cut in hard to cause them to grow more vigorously, but very strong growers may with advantage be left longer, and

pruned to the first bold bud nearest the base of each shoot. With bushes, the shoots, if desired, can be left their full length and pegged down as mentioned above, or pruned in much the same manner as advised for Tea Roses.

All the best trade growers of Roses work the varieties on the stocks most suited to each, and therefore that question is settled for the purchaser when he buys his stock; and as the varieties are so very numerous, only a few comparatively of those



FIG. 27.—ROSE CLIO.

(From a Photograph by Richmond & Peto, Lustleigh, S. Devon.)

of known merit are named here, and, unless otherwise noted, are all of vigorous growth. A more extended list is to be found at end of chapter.

Abel Carriere, deep maroon; large, and of good form. Alfred Colomb, carmine-red; a grand old variety, of perfect form. A. K. Williams, rich light crimson; one of the finest of this class. Baroness Rothschild (Fig. 26), rosy-pink; a large flower, freely produced. Charles Gater, crimson-rose; large; flowers very freely. Charles Lefebvre, bright red, shaded with purple;

a splendid old variety. Clio, flesh colour, shaded with pink; flowers large and abundantly produced (Fig. 27). Comtesse de Paris, soft rose, shading to white; of fine form and pretty. Comte Raimbaud, shining crimson; beautiful shape; excellent. Dr. Andry, bright red; of good shape; very floriferous. Duc d'Orleans, deep crimson; of good form; a promising new variety. Duchess de Morny, light rose; grand

form; an excellent old Rose. Duke of Connaught, velvety-crimson; perfect shape. Duke of Edinburgh, fine deep vermillion; an indispensable old variety. Duke of Teck, light-crimson; a large globular flower, of perfect shape. Emily Laxton, cherry-rose; very charming in the bud state. Fisher Holmes, deep scarlet; large, and of perfect shape. General Jacqueminot (Fig. 28), deep velvety-red; one of the best old varieties. Glory of Cheshunt, crimson; a splendid bedding Rose. Her Majesty, flesh colour; very large and fine; it is best on the Briar stock. John

FIG. 28.—ROSE GENERAL JACQUEMINOT.



Hopper, rosy-crimson, large; very free-flowering. Lady Sheffield, rosy-pink; a well-shaped and handsome variety. Madame Eugene Verdier, silvery-rose; perfect shape; a first-rate sort. Madame Hippolyte Jamain, white, tinged with pink; large and pretty. Madame Lacharme, pure white; pretty, and an abundant blossomer. Madame Norman Neruda, cherry-carmine; perfect shape, and nicely scented. Marchioness of Dufferin, rosy-pink; excellent form. Margaret Dickson, white;

a grand and well-shaped flower. Marie Baumann, crimson; a splendidly-formed flower. Mrs. John Laing, soft pink; a pleasing and beautiful Rose. Paul's Early Blush, blush-white, of good form, and a profuse blossomer (Fig. 29). Paul Neron,



FIG. 29.—ROSE PAUL'S EARLY BLUSH.

(From a Photograph by Richmond & Peto, Lustleigh, S. Devon.)

deep rose; of good form; one of the largest Roses. Pride of Reigate, crimson, with white stripes; the H.P. striped form. Pierre Notting, intense dark red; large, and of good form. Princess Mary of Cambridge, pale rose; large, and

very free. Reynolds Hole (Fig. 30), deep maroon, flushed scarlet; very dark and distinct. Senateur Vaisse, bright red;

an old Rose, difficult to excel. Ulrich Brunner, cherry-crimson; a magnificent flower, and very vigorous. Violette Bouyer, white; large globular flowers; free and good. Xavier Olibo, velvety-crimson; of good form, and a moderate grower.



FIG. 30.—ROSE REYNOLDS HOLE.

cious perfume, somewhat similar to that of the Tea Roses. The plants are nearly evergreen, and produce their flowers in clusters.

In this class are included some of our finest Roses, and some of the varieties are found in almost every garden of extent, flowering continuously in many instances all through the summer and autumn months. A few of the best known, like Maréchal Niel and W. Allen Richardson (Fig. 31), are sometimes termed unsatisfactory, but if the soil or border is well prepared, as already advised, and the plants are given a few good saturatings at the roots during the summer, when planted against walls, they will, in the majority of instances, grow and flower profusely. None of these varieties should be severely pruned—merely taking out, in fact, the weak wood and exhausted pieces, and

Noisette Roses

(*Rosa indica Noisettiana*).

The country of which *Rosa indica* is a native does not appear to be known, but *R. i. Noisettiana* is probably the result of crossing *R. indica* with *R. moschata*. Introduced into Europe from America by Mons. P. Noisette about 1820. The majority of the varieties have a deli-

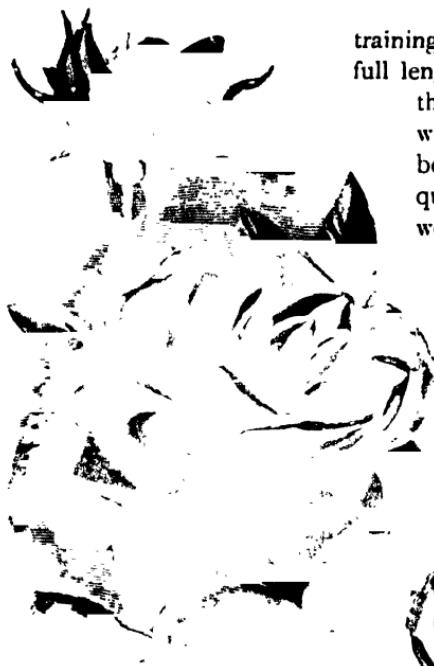


FIG. 31.—ROSE WILLIAM ALLEN RICHARDSON.

standard. Aimée Vibert, white; a perpetual blossoming variety; it makes a good screen. Celine Forestier, deep sulphur-yellow; splendid in all forms. Duchess of Mecklenberg, light yellow; flowers in large bunches. Lamarque, pure white; a grand Rose on a warm wall; tender otherwise. L'Ideal, yellow, shaded with bronze; beautiful; a good habit. Madame Pierre Cochet, apricot; a very pretty variety. Maréchal Niel (Fig. 32),

training in the shoots nearly their full length. If pruned hard, although the growth may, and probably will, be rampant, flowers will be conspicuous by their small quantity. A few varieties answer well as standards, the heads being trained in a weeping or umbrella form. These are mentioned as making good standards; all the others should be trained against a wall or pillars: Adelina V. Morel, yellow; small, and produced in bunches; best as a



FIG. 32.—ROSE MARECHAL NIEL.

golden-yellow ; this variety needs no recommendation. *Rêve d'Or*, deep yellow ; a grand and hardy variety. W. Allen Richardson, deep orange ; now a well-known favourite.

Bourbon Roses (*Rosa indica bourboniana*).

These Roses are very sweet-scented, and are remarkable for the second crop of flowers being the best. They are supposed to have resulted from a cross between *R. indica* and *R. gallica*, and are a remarkably free section of the Monthly Roses. Introduced from the Isle of Bourbon about 1825.

This is a pretty class, and if not pruned severely, the plants will flower most abundantly in the autumn. The following varieties can be recommended : Armosa, pink ; this makes a bold effect if planted in a mass. Climbing Souvenir de la Malmaison, light flesh colour ; very fine and free. Madame Isaac Pereire, light carmine ; very pretty and a free grower. Mrs. Paul, rosy-peach colour ; an excellent and beautiful variety ; good grower. Souvenir de la Malmaison, flesh colour ; large ; a well-known popular variety.

Rosa Polyantha hybrida.

This belongs to the *Rosa multiflora* group, some sections of which are very dwarf, as in the present case, while others are tall climbers, as in the case of Crimson Rambler. The flowers are always small, and produced very continuously in large clusters.

These lovely little Roses are not so well known as they should be, or they would undoubtedly be widely planted or grown in pots, as they succeed admirably both under glass and outside, and their large trusses of small, graceful blossoms are very useful indeed where cut flowers are wanted. If in pots, a compost of four-fifths fibrous, rich loam and one part decayed manure, with a little bone-meal added, will grow them well ; and if forced gradually—not given too much heat at first—and kept close to the glass, it is astonishing how admirably they grow and flower. Immediately a shoot has done flowering, whether inside or outside, it should be cut down nearly to its base ; fresh growth will then be made, and another crop of flowers very shortly produced. In fact, by this plan several crops of blossom will be secured from the plants during the season. Another advantage the Roses of this section possess is their dwarf habit, 1ft. to 18in. being the average height of the plants when in flower, which renders them suitable for margins

of borders, or for planting by the sides of paths, where the flowers can be gathered easily. Generous treatment in manuring is greatly appreciated by these plants when once well established, though care must be taken not to overdo it by using either liquid or solid manure in a too powerful application.

All the following are charming varieties: Anna Marie de Montravel, white, sweetly-scented flowers, borne in large clusters. Blanche Rebatel, crimson, with white centre; very attractive. Camille de Rochetaillé, pure white; lovely; an abundant blossomer. Clothilde Soupert, white, with pink centre; one of the very best. Etoile d'Or, lemon-yellow; distinct and pretty. Eugenie Lamesch, orange, shading to pale yellow, Ranunculus-flowered. Filius Straussheim, cream, changing to orange; free-flowering. Georges Pernet, rosy-peach; fine for forcing or outside planting. Gloire des Polyantha, rose, shaded with white; a lovely variety; one of the best. Leonie Lamesch, orange, with terra-cotta edge. Mignonette, rosy-pink; a really charming variety. Paquerette, pure white; fine variety. Perle d'Or, yellow, shading to orange.

Provence Roses (*Rosa centifolia*).

Probably one of the oldest class of Roses, and found in quantity in many gardens, where they make a good display in June and July. Introduced about 1596. The term "Cabbage Rose" is applied because of the supposed similarity of form the petals of the flowers bear to the leaves of the cabbage.

All the Provence Roses are more or less fragrant, and being so easy to grow, they succeed almost everywhere, and always appear to advantage in shrubberies or large beds. Nearly all give the best results, if pruned rather severely, and not permitted to become overcrowded. Although these varieties succeed planted amongst other shrubs in a struggle for existence, they respond freely to good treatment. The well-known Cabbage Rose, and also Cristata, White Provence, and Maiden's Blush are about the best varieties of this class, followed by the smaller-flowered forms of the same type, such as White de Meaux, De Meaux, Spong, and Moss de Meaux, all the above ranging from white to rosy-pink in colour. The old York and Lancaster Rose represents the striped form of Provence Roses, of which there are a fair number of varieties, Camayoux, Rosa Mundi, Commandant Beaurepaire, Mecene, and Perle des Panaches being amongst the best.

Moss Roses (*Rosa centifolia muscosa*).

The Moss Rose is considered to be a descendant from the Provence Rose, and its treatment or culture is much the same ; and when it is remembered how sweetly-scented and charming it is, one wonders why it is not more widely grown and better cultivated. In its lovely mossy buds, this section possesses an attraction found in no other. The colours vary from pure white to deep crimson, and the following varieties, with their colours, are good ones, and practically sure to afford satisfaction if planted : Angelique Quetier, lilac rose ; Baron de Wassenaer, bright red ; Blanche Moreau, pure white; excellent—that well-known authority, Mr. George Paul, recommends this variety for a hedge, in his catalogue ; Celina, deep crimson ; fine ; Cristata, shining rose ; Gloire des Mousseuses, blush ; extra good ; Laneii, rosy-crimson ; Muscosa Japonica, crimson ; very heavily mossed buds ; Œillet Panache, white, striped with red ; this is considered to be one of the best striped varieties.

Evergreen Roses (*Rosa sempervirens*).

Though not quite evergreen, these retain their foliage most of the winter. All the varieties are admirably adapted for planting against fences, pillars, in wild gardens, and similar places, as they grow rampantly, and flower in the most profuse manner if the young wood is not cut back, but left its full length, and all the weak, exhausted wood occasionally cut out. Amongst the varieties the following are excellent, viz. : Russelliana, crimson ; Flora, rose ; and Felicité Perpetué, white. If these are planted in masses they produce a charming effect when in blossom.

Ayrshire Roses (*Rosa*

A native species found nearly all over Europe. The plants are of quick growth, and the shoots long, thin, and graceful. In the wild garden these are invaluable, as they will climb banks, run up or over trees, arches, &c., scarcely needing any attention, while being so very hardy they will thrive in the coldest districts. Tastes differ, fortunately, but all will admire the following varieties : Splendens, white, tinted with red, semi-double ; Arvensis ; Bennett's Seedling, white, tinged with pink, one of the best ; and Ruga, pale pink colour.

Boursault Roses (*Rosa alpina*).

An Alpine species, quite hardy in the coldest districts of Britain. Remarkable for its strong growth and smooth wood.

This is another remarkably hardy section, and, like the Ayrshire Roses, will grow anywhere and everywhere; and if all the weak and spent wood is cut out immediately after the flowering period is over, the long, strong growths will become well-ripened, and bear immense bunches of lovely semi-double red or crimson flowers. The following are the best and most useful varieties: Gracilis (the best of all), Elegans, and Amadis.

Sweet Briars (*Rosa rubiginosa*).

A native species often found wild where the soil is sandy. The foliage is pleasantly scented.

In these, again, we have charming Roses for the wilder portions of the garden, as witness Janet's Pride, with its lovely crimson flowers, borne in great abundance; and also the Double Scarlet and Double White. Not only will these varieties grow freely anywhere, but they are most attractive when in flower and fruit.

Lord Penzance Hybrid Sweet Briars.

Raised by Lord Penzance from Sweet Briars, hybridised and selected. The flowers are semi-double, and of various pretty shades, with the sweet-scented foliage of the Sweet Briar. They have of late years become very popular, alike for their beautiful flowers, handsome berries, and for their value for clumps, arches, hedges, and nearly all other purposes, as they can be employed with a certainty of their hardiness and success. Amongst the score or so varieties, the following are specially pretty and useful: Lady Penzance, delicate bronze; Lord Penzance, a shade of lemon; Julie Mannering, pink; Lucy Ashton, white, tinged with pink. Rose Bradwardine, Lucy Bertram, Anne of Geierstein, and Amy Robsart are all rose-coloured varieties; and Jeannie Deans is a pretty rosy-crimson. All of the above are worthy of a place in every garden.

Austrian Briars (*Rosa lutea*).

These consist of selections from a Rose found growing wild in some parts of Europe. The flowers are usually nearly single, and freely produced on pretty prickly shoots.

When planted out in an open sunny position, and not pruned much, these Roses are early blossoming and very attractive. The Austrian Yellow (Fig. 33) and Austrian Copper are perhaps the



FIG. 33.—ROSE AUSTRIAN YELLOW.

best known, but the variety known as Persian Yellow is much the best, the flowers being very distinct and of the deepest yellow colour. Harrisonii is not so vigorous as the last-named, but it is a pretty sulphur-yellow, with double flowers, and forms a pretty bush.

Rambler Roses.

This is a tall-growing section of *Rosa multiflora*. The best variety (Crimson Rambler) is stated to have been introduced from Japan about 1890. The plants are very vigorous, and bear an abundance of small flowers in clusters.

That splendid variety Turner's Crimson Rambler deserves almost a class for itself, for its great beauty and usefulness. Not only does it force well and blossom most freely in small pots, but it is probably the best Rose in cultivation for planting against pillars or arches. It is not so well suited for planting against a wall, never growing or flowering so freely as when the air can play all round it. Nearly every piece of young wood

will contribute its quota of blossoms, and the best mode of treating this variety is to prune immediately after flowering, cutting away exhausted or congested wood, and keeping the growth clean and free from insect or fungoid attacks. Anglia (yellow), Thalia (white), and Euphrosyne (pink) are sometimes known as Rambler varieties, but, though very effective and good growers, they are not equal to Crimson Rambler.

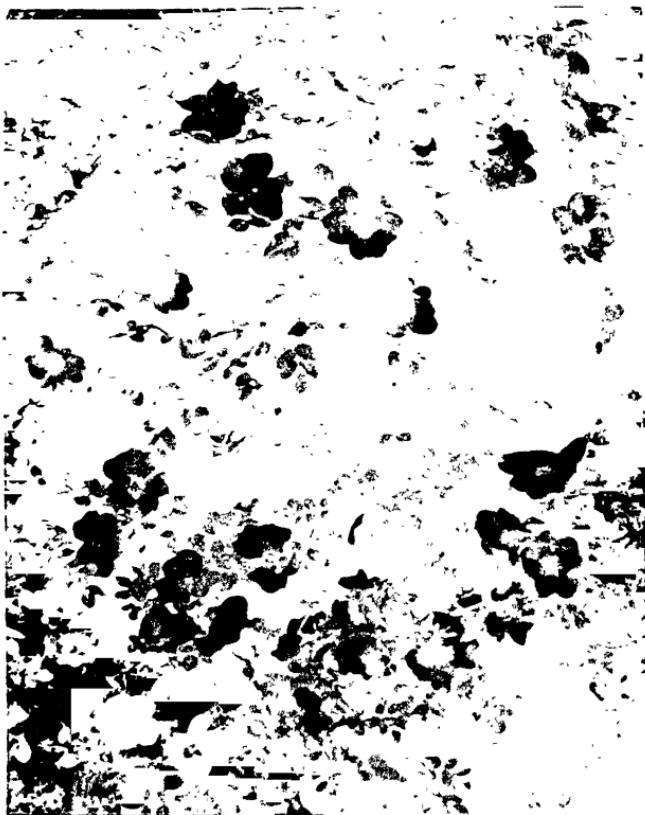


FIG. 34.—*ROSA SPINOSISSIMA*.

Scotch Roses (*Rosa spinosissima*).

These are probably the most prickly of all the Rose family. They are very hardy, and produce a mass of pretty flowers during the summer months, and are excellent for planting on the margins of plantations and shrubberies and in the wild garden (Fig. 34). In such positions they seem quite happy, and will grow

and flower profusely for years, if liberally manured annually, and the old wood is cut out when becoming congested. There are probably not more than six or eight distinct varieties, the Double White and Double Yellow being the best and most enduring in flower.

The above about covers the field so far as varieties are concerned, with the exception of the Japanese Roses (*R. rugosa*), which are dealt with under "Trees and Shrubs."

The most troublesome of the pests affecting Roses are Aphides, Moth Caterpillars, Sawfly Caterpillars, Thrips, Earwigs, Ants, Weevils, Rosechafers, Leaf-cutting Bees, Rose-leaf Hoppers, Rust, and Mildew. Cockchafer grubs are now and again injurious to the roots of Roses; and Scale insects very occasionally assert themselves. Insects which chew, and at the same time feed exposed, are best dealt with by means of Paris Green (1oz. to 24galls. of water). Those feeding between drawn-together leaflets should be killed between finger and thumb. Insects which suck, like Aphides, are best treated to Gishurst Compound or Abol. The remainder must be hand-collected.

The following additional varieties are described for the benefit of those needing a wider selection than is given under the different headings.

Tea

ADAM, blush-rose, very sweet scent. AMELIE POLLONNAIS, satin-rose; new. BORONNE ADA, creamy-white; new. BONAMOUR, bright red; new; very promising. CHRISTINE DE NOUE, deep cr. CLEOPATRA, pale pink. COMTESSE D'USV, pure white. EMPRESS ALEXANDRA OF RUSSIA, bronzy-salmon; new. ENCHANTRESS, soft creamy-white; new. G. NABONNAND, soft rose. HATCHET EFFENDI, yel., shaded soft rose. HOMER, rosy-white. ISABELLA RIVOIRE, soft salmon-rose; new. ISABELLA SPRUNT, sulphur-yel. JEAN PERNET, bright yel. JEANNE GUILLAUMEZ, red, shaded salmon. M. ADA CARMODY, white, shaded rose; new. MADAME DE WATTEVILLE, white, shaded salmon. MADAME FALCOT, apricot - yel. MADAME LAMBARD, salmon - pink. MADAME RENE GERARD, coppery-yel. MADAME VILLERMOZ, white, shading to salmon. MEDEA, lemon colour. NARCISSE, soft yel. PRINCESS ALICE

DE MONACO, creamy-yel. RUBENS, white, shaded rose. SOUVENIR DE CATHERINE GUILLOT, coppery-car. SOUVENIR D'ELISE VARDON, creamy-white. SOUVENIR DE MADAME SABEFYROLLES, rosy-salmon. SYLPH, white, tinted with rose.

Climbing Tea

BOUQUET D'OR, salmon-yel. CLIMBING PERLE DES JARDINS, pure yel. EMILY DUPUY, pale fawn. GROSSHERZOG ERNST LUDWIG, the red MARECHAL NIEL. KAISERIN FRIEDRICH, the colour of Gloire de Dijon. MADAM MORFAU, coppery-yel. VALENTINE ALTEMANN, pure white.

Hybrid Tea-scented

ANTOINE RIVOIRE, rosy-flesh. AUGUSTINE GUINOISSEAU, a white La France. AURORA, salmon-pink; new. BEAUTE LYONNAISE, white, shaded with yel. CHARLOTTE GILLEMOT, ivory-white. CLARA WATSON, salmon-pink. DAWN, rosy-pink, suf-

Hybrid Tea-scented (*contd.*)

fused silvery-rose, semi-double. GRUSS AN TEPLITZ, bright scar. HELENA CAMBIER, salmon-rose. JOSEPHINE MAROT, white, shaded rose. L'INNOCENCE, pure white. LADY HENRY GRUNVENOR, flesh. MADAME EUGENE BOULLET, bright yel. MADAME JULES FINGER, creamy-white. MARJORIE, white, suffused with pink. MARQUISE LITTA, car.-rose. MRS. W. C. WHITNEY, deep pink. PRINCESS BONNIE, rich cr.; semi-double. SOUVENIR DE WOOTTON, rosy-red. THE METEOR, deep cr. W. F. BENNETT, cr. WHITE LADY, creamy-white.

Hybrid Perpetual

ALPHONSE SOUPERT, bright rose. AUGUSTE RIGOTARD, brilliant red. BACCHUS, cr. BARON HAUSSMANN, dark red. BESSIE JOHNSON, pale blush. BRILLIANT, rich sc.-cr. CHARLES DICKENS, magenta-rose. CRIMSON QUEEN, velvety - cr. DOWAGER DUCHESS OF MARLBOROUGH, pure rose. DUC D'ORLEANS, deep red. DUCHESS OF BEDFORD, cr.-sc. DUKE OF ALBANY, deep cr. EDITH TURNER, pale blush; early. ELISE BELLE, white, faintly shaded rose. ELLA GORDON, deep cherry. EXPOSITION DE BRIE, pale red. FRANCISQUE RIVE, cerise, shaded car. GLOIRE DE L'EXPOSITION DE BRUXELLES, purplish-amaranth. GRAND MOGUL, deep cr. HELEN KELLER, rosy-cerise. INIGO JONES, dark rose. JULES MARGOTTIN, bright cherry. LADY SHEFFIELD, ro-y-cerise. LA DUCHESSE DE MORY, delicate rose. LORD BACON, rich cr. LORD MACAULAY, sc.-cr. LOUIS VAN HOUTTE, blackish-cr. MADAME BOIS, bright rose. MADAME CHARLES

WOOD, vinous-cr. MADAME JOSEPH BONNAIRE, silvery-rose. MADAME LACHARME, white, flushed rose. MADAME VERRIER CACHET, bright rose. Mlle. MARIE RADY, bright red. MAGNA CHARTA, rich pink. MARCHIONESS OF LORNE, rose; MARQUISE DE CASTELLANE, rich rose. MAURICE BERNARDIN, vermillion. MRS. FRANK CANT, pale pink, shaded silvery-white. MRS. R. G. SHARMAN CRAWFORD, rosy-pink. PANACHEE DE BORDEAUX, pink, shaded velvety-red, striped with white. PIERRE NOTTING, blackish - red. PREFET LIMBOURG, velvety-red. PRIDE OF REIGATE, spotted, and striped white. QUEEN OF QUEENS, soft pink. QUEEN OF WALTHAM, rosy - cherry. RED DRAGON, cr. REV. ALAN CHEALES, pure lake. SALAMANDER, sc.-cr. SILVER QUEEN, silvery-blush. SPENSER, satin-pink. ST. GEORGE, cr. T. B. HAYWOOD, cr.-sc. TOM WOOD, red. TRIOMPHE DE CAEN, velvety-purple. ULSTER, salmon pink. WALTHAM STANDARD, deep car.; new. WILLIAM WARDEN, pink. XAVIER OLIGO, velvety-black.

Bourbon

J. B. M. CANNON, salmon-pink; of good habit, and excellent for forcing.

Evergreen

BANKSIA FLORA, white, with yel. centre. MYRIANTHES RÉNONCULE, bluish, edged with rose. PRINCESS MARIE, deep pink.

Rambler

LION, bright cr.; late. PURPLE EAST, rosy-carmine. WALLFLOWER, rosy-cr.; large.

CHAPTER III.

ANNUALS AND BIENNIALS.

Their Uses—Methods of Raising for Early and Late Displays—General Treatment in the Border—Selected List of Species and Varieties.

ANNUALS are plants which, botanically speaking, grow from the seed, flower, fruit, and die within the short space of one year. This definition is, however, not absolutely correct, as some annuals, by a special mode of culture, may be enticed to live longer. Such is the case with the Mignonette, which will continue to flower for two or more years, if the old blossoms are pinched off as they decay, thus preventing seed from ripening, and throwing the strength of the plant into the production of more growth and flower.

For a long time, annuals occupied a very subordinate position in the garden, this no doubt being due to the fact that they were cultivated in a manner not calculated to show them off to the best advantage. Perhaps the craze for "summer bedding" also helped to bring about this deplorable state of affairs. Far too often the only cultivation they received was the scratching over of the surface-soil with a rake, followed by the seed-sowing. For the rest they were allowed to take care of themselves, and, if they escaped the attacks of slugs, &c., they were left unthinned and unlooked-after, the result being a weak, spindly growth, and consequently a short-lived, miserable show of flowers. Like all other plants, they require attention to bring them to perfection, and under good cultivation they produce a splendid display. They are certainly a beautiful class of plants, and it is a pity that they should have fallen into such a state of neglect. At the present day, however, it is gratifying to observe a distinct revival in the

cultivation of annuals, and let us hope that ere long they will be thought as much of as they were in the days of our forefathers, before the introduction of the bedding Pelargonium. Our public parks and gardens are moving a step in the right direction by introducing numerous annuals into their summer bedding arrangements, and thereby raising the standard of this class of plants in the eyes of the garden-loving public.

The chief use of annuals is undoubtedly the embellishment of the mixed herbaceous border. If time and money are at command, the border may be kept quite gay with annuals for a considerable time, for, as the old clumps get shabby, they may be replaced by other annuals, which have been grown on in pots, and, therefore, do not suffer much by planting out during the heat of summer. An extensive herbaceous border, however, if treated in this manner, entails a large amount of labour, as, in addition to the growing of plants in pots for succession, there are the weeding, staking, watering during dry weather, &c.—operations which must be attended to in order to keep the border in a presentable condition.

Some annuals make excellent beds in themselves, such, for instance, as the Virginian Stock, and some are also very useful in summer bedding. This will be noted where the plants are described.

Annuals which are grown for outside display are divided into two classes, viz., Hardy and Half-hardy.

Hardy Annuals.

This class includes all those plants that are able to withstand the winter in the open ground. The time of sowing must, however, depend largely upon the time when the display of flower is required.

METHODS OF RAISING—FOR EARLY SHOW.—If the plants are intended to flower in April and May, the best time to sow is in August and September, selecting a warm, sheltered border. The most suitable soil for the majority of annuals is a sandy loam, which, if poor, ought to have been moderately enriched with manure, and deeply dug some time previously. The first thing to do, then, is to level the border and make the surface soil fine and even by means of a rake; the seed should then be sown in shallow drills, and a little fine soil drawn over it, the quantity depending upon the size of the seed, very small seed requiring only a mere sprinkling of soil, just enough to cover

it, whilst larger seed may have a depth of a quarter of an inch or so.

Sowing in drills, as recommended, is a much better plan than sowing broadcast, as the operator is then able to run the hoe in between the rows, and so keep the surface of the soil open for the admission of air, a state which is very beneficial to the young seedlings. Another advantage is that the young plants can be much more easily and expeditiously thinned. After sowing, a good soaking should be given through a fine rose, so as not to disturb the seeds, and a thin shading of tiffany, or other light material, should be thrown over the border to prevent excessive evaporation, and keep it in a uniform state of moisture. Great care must be taken to remove this as soon as the seedlings show the slightest sign of breaking through the soil, or they will be spoiled. As soon as the seedlings appear, and are large enough to handle, they should be thinned, so as to get sturdy little plants, which are better able to withstand the winter, and are also in a much better condition for removal to their permanent positions in spring. If allowed to grow up without thinning, the roots become matted together, and get broken during transplanting, and the plants are thereby weakened. After thinning, the only attention that is needed is to keep them well watered and free from weeds during the remainder of the autumn. If exceptionally hard weather sets in during the winter, they may have a few dry leaves, or other light material, thrown in amongst them, so as to break the force of the frost. The best time to transplant into their flowering positions is in March, or even earlier, if the weather will allow. At this sowing, only the hardiest kinds should be sown.

FEBRUARY SOWING.—This may be done in a cold frame or handlight, thinning out the seedlings when large enough, and finally transplanting into their flowering quarters during favourable weather in April and May. The general plan, however, is to sow the seed in pans or boxes in a warm house, prick off the seedlings into other boxes, gradually hardening them off, by inuring to light and air, and afterwards transferring to the open border when fear of sharp frost is past. A very handy size of box is one about 18in. or 20in. long, by 10in. to 12in. wide, and 4in. deep.

LATE SOWING.—For late summer and autumn display, the usual plan is to sow where the plants are intended to flower, in

April, May, and even June, if a late autumn show is needed; the seed ought to be sown thinly in patches or broad masses, if effective displays are aimed at, taking care that this is not done in wet weather, when the soil is in a pasty condition. The ground should be deeply dug and enriched with old hotbed manure, leaf-mould, &c., the surface being made fine by raking. It is a mistake to apply too much manure, especially cow- or horse manure, as over-abundant nutrient tends to promote vegetative growth rather than the production of flowers. At the same time a sowing may be made in pans in a cool house, and the seedlings pricked off singly into small pots; these come in very useful for transferring to the open border, taking the place of those which have flowered earlier and have been removed.

GENERAL TREATMENT OF HARDY AND HALF-HARDY ANNUALS GROWN IN THE OPEN BORDER.—When annuals are sown in the positions in which they are intended to flower, one of the most important items to be observed in their cultivation is that of thinning, and it is one that well repays for the time occupied in its execution. Very often annuals are sown thickly in patches in the borders, and allowed to run into flower without any attention being paid to this important item, and the result is that they neither blossom so freely nor are the flowers so fine as when properly thinned. As soon as the seedlings are large enough to be easily handled, thinning must commence, pulling out all the weakly seedlings, and leaving only those that promise to make sturdy, healthy specimens. Finally, they should be thinned so as to leave from three to a dozen to the square foot, the quantity depending upon the size of the mature plant: each one must have sufficient room to develop properly. Slugs very often prove a nuisance in the garden, and they appear to be particularly fond of annuals when in the young state, so that the gardener will act wisely if he is on the alert to prevent their ravages. They seem to have a decided objection to soot, and it is, therefore, a good plan to sprinkle a little over the soil previous to sowing and working it in, afterwards scattering a little over the surface. A ring of dry sharp sand is sometimes placed around the patch of seedlings for the same purpose; but bran laid in patches, or brewers' grains similarly disposed, will be found very attractive.

Staking is another point which must be attended to, if the plants are to be shown off to the best advantage; and it is unfortunately a point which is very often done badly. There

cannot possibly be anything more unsightly in an otherwise neat and well-kept garden than that of seeing a number of thick rough stakes about the border. When stakes are used they ought to be placed so as to be as little seen as possible; the stakes themselves should also be neat in appearance, and preferably green-painted ones, so that if it is impossible to hide them, they will not strike the eye as unsightly objects. Another thing to avoid in staking is that of placing a single stake in the centre of a group of annuals, or, in fact, any other plants, and binding the whole lot to it in a bundle, much after the same fashion as a sheaf of corn. If one stake only is used, the plants should be looped up lightly to it, not bound up tightly, as though the owner were afraid of them running away. Staking is an operation which must be attended to in good time, as when once the plants get beaten down by wind or rain, it is no easy matter to stake them so that they may again appear neat and tidy. For graceful, loose-growing subjects, such as *Gypsophilas*, *Coreopsis*, &c., it is best to use twiggy branches, placing them around and amongst the plants in good time, so that when the plants have grown to their full size, the supports will be hidden amongst the foliage.

If the foregoing operations are promptly attended to, together with those of weeding and watering, these lovely plants will well repay the cultivator for his pains by a display of flowers which ought to convince even the most fastidious of observers that annuals are worthy of a place in every British garden.

The following is a selection of hardy kinds:

ADONIS AESTIVALIS (Fig. 35), often known as *Adonis Flos*, the Pheasant's Eye, is a compact free-flowering little plant, 1 ft. in height, producing its beautiful crimson-scarlet flowers in June and July; it forms a very effective border plant, and is quite easy of cultivation.

AGROSTEMMA CÆLI-ROSA (Rose of Heaven), often referred to *Lychnis*, is a free-flowering and exceedingly pretty plant, 1 ft. high, the flowers varying in colour, some being white, others rose, whilst others again have a tinge of purple in them. It flowers in July. This is sometimes given under the name of *Eudianthe cæli-rosa*.



FIG. 35.—ADONIS
AESTIVALIS.

There is a variety grown in gardens, *fimbriata*, having rose-coloured flowers with white centres, which is certainly an improvement on the type. As its name implies, it has fringed petals (Fig. 36). Another variety, with dark purplish flowers and of neat, compact habit, is known as *purpurea*; it forms an ornamental plant for growing in dense patches in the border.



FIG. 36.—*AGROSTEMMA CŒLI-ROSA FIMBRIATA.*

name of *Alyssum odoratum*. There are in cultivation two or three varieties of it, viz., Little Gem, a dwarf compact-growing plant, only 4in. high, suitable for edging, and Rock Alyssum, a dwarf, spreading plant, valuable for rockwork, baskets, or vases. Both varieties have white flowers. A variegated form is also grown.

AMBLYOLEPIS SETIGERA (*Helenium setigerum*).—A composite plant, with fragrant orange-yellow flowers. It is a native of Texas, and, in this country, grows from 1ft. to 2ft. high. Although seen at its best in July, it flowers most of the summer.

AMBROSIA MEXICANA is a fragrant hardy annual, growing 2ft. high; it is valuable for bedding on account of its sweet-scented and ornamental foliage.

AMMOBIUM ALATUM (Winged Everlasting) is closely related to the Gnaphaliums. It has white, chaffy flowers, with numerous yellow disk-florets, borne from May to September; height from

ALYSSUM MARITIMUM, often known as *Keriga maritima*, is the Sweet Alyssum. Though only growing 6in. high, it forms a charming little bedding plant, valuable also for rockwork and for edgings in the spring flower garden, producing, as it does, numerous small white flowers on its much-branched stem. It commences to flower in early spring, and continues throughout most of the summer. It produces seed in abundance, and if not interfered with, will become self-sown. It is an excellent bee-plant, and is familiar in some gardens under the

1½ ft. to 3 ft. On light sandy soils, it very often assumes a perennial form, but on heavy ground it should be treated as an annual. It does well if seed is sown in the autumn, the plants being kept in a cool house until spring. The variety *grandiflorum*, with flowers almost twice as large as the type, and much whiter in colour, forms a fine ornamental border plant, and is also much prized for cutting. It grows about 2 ft. high, comes true from seed, and is a decided improvement on the species.

ANCHUSA AFFINIS, one of the Borage Worts, with cobalt-blue flowers, blossoms all the summer and autumn. It is of bushy habit, growing about 1 ft. high.

AVENA STERILIS (Animated Oat) is an elegant plant, growing 2 ft. high, and producing loose panicles of drooping barren flowers; it belongs to the same genus as the common Oat, and is easily grown.

BARTONIA AUREA (Fig. 37) is a very ornamental and decorative plant, with large golden-yellow flowers an inch or more across; they open in the evening, and are then very fragrant; as they fade they assume a reddish tinge. It grows to a height of 1½ ft., and produces flowers about June. It is best sown in April, in the position in which it is intended to flower, the seedlings being thinned out to a distance of 4 in. The seed should only have the merest sprinkling of soil over it, as it is very fine, and if buried too deep it would be impossible for it to push through. It is best grown in patches in the herbaceous border, where its bright flowers are shown off to advantage; it would also do admirably in a prominent position in the rock garden, care being taken that it does not smother any of the dwarf-growing alpines.



FIG. 37.—*BARTONIA AUREA*.

BRIZA MINOR (Small Quaking Grass) (Fig. 38), known also as *B. gracilis* and *B. minima*, is one of our native grasses, being found occasionally in the southern counties of England. It is very much like the common Quaking Grass, though decidedly smaller, seldom growing more than 8 in. or 9 in. in height. The seed may be sown in the open border in March, and the plants

will then flower in June and July. It is a very ornamental, graceful plant, and is alike at home in the hardy fernery and in the herbaceous border. It is also largely grown for cut flowers, as it is exceedingly useful for making up bouquets and for the decoration of vases; for this purpose a large batch of



FIG. 38.—*BRIZA MINOR.*



FIG. 39.—*BRIZA MAXIMA.*

it should be grown in a part of the garden devoted entirely to growing plants for cut flowers, and when the branches are full grown they should be cut and placed in stands to dry, or hung up in light airy positions in the sheds. Another good ornamental grass is *B. maxima* (Fig. 39).

CACALIA COCCINEA (*Flora's Paint-brush*) is an attractive composite border plant, growing to a height of $1\frac{1}{2}$ ft., and producing brilliant scarlet flowers. *Cacalia aurea* is much the same in height and habit, but differs in having bright orange-coloured flowers. These species form excellent border plants, and the cut flowers are sought after for bouquets and vases. Cacalias should be sown in the border in April.

CALANDRINIA SPECIOSA (syn. *C. Menziesii*) is one of the Rock-Purslanes, and is useful for either borders or rockwork. It is very dwarf-growing, seldom exceeding 6 in. in height, yet producing large, rosy-purple flowers, 1 in. across. It should be grown in a light, sandy soil, and if sown early in spring where it is intended to flower, a succession of blossom will be kept up from June to September. As the Calandrinias only open their flowers during bright sunshine, they should have a sunny situation given them. A white variety is now offered, under the name of *C. speciosa alba*; this may either be grown separately or mixed with the type, in which case it shows off to advantage.

CALENDULA.—*C. officinalis* (*Pot Marigold*) is an interesting old-fashioned garden plant, grown extensively for its large yellow flowers. The typical plant grows to a height of 2 ft., and flowers from June to September. If sown in March or April, and the plants thinned to 9 in. apart, they form excellent

subjects for the mixed herbaceous border ; they are also suitable for showy positions in the wild garden or woodland, in which situations they should be sown or planted to form bold groups. A large number of varieties are now sent out, amongst the best being Meteor, double, yellow, striped with brown, 1ft.; Orange King, 1st.; Yellow Queen, double; Prince of Orange, 1st. *Calendula pluvialis* (*Dimorphotheca pluvialis*), the Cape Marigold, is a free-growing subject, very effective in beds and borders, producing large single white flowers, with golden centres, the underside of the petals being of a rich maroon colour. It is a plant somewhat resembling a Marguerite, and grows to a height of 18in. Flowers in June and July.

CALLIOPSIS. — The plants found in catalogues under this name will be noted under "Coreopsis."

CALLIRHOE PEDATA (Poppy Mallow) is an elegant malvaceous plant with beautiful saucer-shaped flowers of a brilliant carmine, with a white centre. It grows to a height of 2ft. Seed should be sown early in spring, steeping it well before sowing, and transplanting into a moderately dry soil, in which position it will commence to flower in July, and will keep on until quite late in the autumn. The variety *nana* is a dwarf form, growing 1ft. high, with flowers like the type. It thrives best in poor dry soil, and is very effective in flower-beds and borders. As the Callirhoes make taproots, great care must be taken in transplanting.

CENTAUREA. — *C. Cyanus* (Cornflower, Fig. 40) is one of the loveliest of our blue-flowered annuals. It is a native plant, growing to a height of 3ft., and flowering in July. Although the typical colour is a bright blue, considerable variation is shown, some being found with pure white, others with purplish flowers, whilst others again are of a deep rose. Several named varieties are



FIG. 40.—CENTAUREA CYANUS.

now advertised, such as Victoria Blue, a lovely little plant for edgings, rockwork, &c., with bright blue flowers; it is very dwarf, growing only 6in. high; Emperor William, another dwarf annual, with blue flowers, &c.

These varieties of *C. Cyanus* are exceedingly showy plants for the herbaceous border, and also make charming pictures when grown in quantity in wild gardens and woodlands. A small bed in the flower-garden would produce a grand display if sown with mixed seed, saved from the dwarf-growing kinds. The cut flowers are also highly prized for vases and bouquets. The Cornflower will stand our hardest winter outside without injury. It is best sown in the early autumn in beds, to be transplanted in the early spring into its flowering quarters: it would do equally well if sown at the same time of the year in the position in which it is intended to flower. *C. depressa* is a showy annual with fine blue flowers, having crimson centres. It is rather like the common Cornflower, but has brighter flowers, and is much dwarfer, growing only 1ft. high. *C. suaveolens*, more generally known as Sweet Sultan, is an effective plant,

with showy thistle-shaped flowers, useful for cutting for bouquets; they are very fragrant, and last a long time in water. There are three varieties with white, purple, and yellow flowers, the last-mentioned being much the prettiest. If sown in autumn the plants produce larger flowers and also blossom longer than if sown in spring. They grow to a height of 1½ft.

CHRYSANTHEMUMS.-

These form a lovely set of plants, and should be grown in every garden, whether large or small. They are exceedingly free flowering, of neat, robust habit, and are very useful decorative subjects, whether grown in beds by themselves, in large

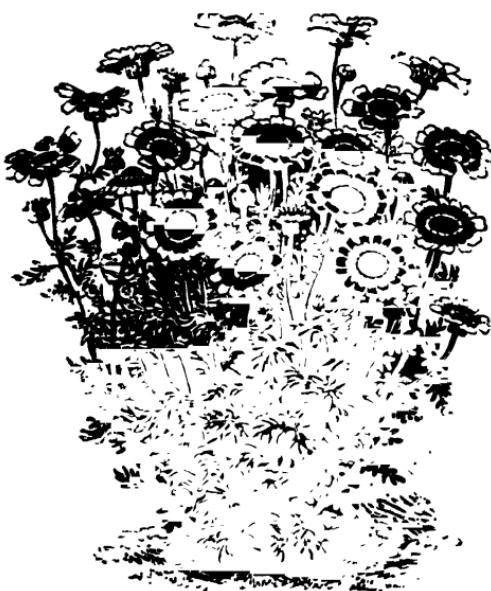


FIG. 41.—*CHRYSANthemum CARINATUM BURKIDGEANUM.*

patches in the mixed flower-border, or in bold groups in the wild garden. The cut flowers are also highly appreciated for bouquets. *C. carinatum* (Tricolor Chrysanthemum, or Summer

Marguerite, as it is often called) is extensively grown in beds and borders, and is also valuable for cut flowers. It attains a height of 2ft., producing its purple and white flowers during August. Numerous varieties of it are now in cultivation, one of the best being *Burridgeanum* (Fig. 41), a compact-growing plant, bearing white or yellow flowers, with crimson or purplish-brown rings, enclosing a purple disk, and growing to a height of 18in.; Lord Beaconsfield, a form with mauve and yellow flowers growing 2ft. high, is also very good. There are numerous others, some with large handsome double flowers of many beautiful shades; others with double fringed flowers in white, rose, orange, scarlet, crimson, &c.; others, again, with bright single flowers; whilst a further section have pretty golden leaves.

C. coronarium (Crown Daisy) is a useful border-plant, thriving well under the influence of smoke. It is, therefore, a favourite in town gardens, growing to a height of 2½ ft., and flowering continuously from July to September. The typical flower is yellow, but under cultivation, and in the hands of the hybridist, several forms have originated, so that we now have varieties with double yellow, white, and lemon flowers. It is best sown in April or early in May. *C. segetum* (Corn Marigold), although a British plant, is worthy of a position in the flower-border. It grows to a height of 18in., and produces its yellow flowers from June to August. The variety *grandiflorum* is a first-rate border-plant, growing 2ft. high, and bearing very large rich yellow flowers, which are greatly valued for cutting.

CLARKIAS are free-flowering border plants, of light, graceful habit, and very easy of culture. The seed may be sown outside in September, either in permanent positions or in beds for transplanting into the open border as soon as large enough; these will flower well in the early spring. The first sowing in spring should take place in March, thinning the plants to about 9in. apart; these will flower in July, when the autumn-sown plants are past their best. Other sowings for succession should be made until about the beginning of June, these keeping up a supply of flowers until the end of October. *Clarkia elegans* is an erect-growing much-branched annual, 2ft. high, bearing numerous purple or rose-coloured flowers on long leafy racemes. There are now many forms of this species, with different coloured flowers. These form strong branching plants, very profuse flowering, and are very effective subjects when grown as border plants; they are also extremely useful when grown in beds by themselves—whether the kinds are kept separate or mixed. The variety Tom Thumb, with rose-coloured flowers, grows only 1ft. high, and is an excellent plant for sunny spots in the rockery, or in the front of the herbaceous border. *C. pulchella* grows 2ft. in height, producing its flowers in June; it is easily distinguished from *C. elegans* by

its deeply trilobed petals, those of *elegans* being entire. The typical flower is deep rose-coloured, but plants now exist with flowers varying from pure white to dark purple, some being single, others double. All are exceedingly showy, and should be grouped in mixed borders where their bright colours will be highly appreciated. As cut flowers, they are also in great demand.

COLLINSIA.—*C. bicolor* (Fig. 42) is a pretty, profuse-flowering plant, 1 ft. high, the upper lip of the corolla being white, whilst the lower lip is of a purplish colour. It will stand smoke well, and consequently is very useful for growing in the neighbourhood of large towns.

The seed may be sown in autumn, and the plants protected slightly during severe weather in winter, when they will flower freely in May. If sown in March and April they will flower in about three months from the time of sowing. A white variety is also in cultivation under the name of *alba* or *candidissima*. *C. verna*, a species growing 1 ft. high, and flowering early in May, has white flowers, with the lower lip of a beautiful blue colour. Although this plant is so handsome, it is seldom seen in gardens, and very rarely met with in nurserymen's catalogues. It ought to be a plant very widely grown, seeing that it produces its flowers at a time when annuals are rather scarce.

The length of time the

display lasts—from six to eight weeks—ought also to recommend it as a plant worthy of a place in every garden. The seed must be sown in August or early in September in pans of light soil, and the seedlings, when large enough to be handled, should be pricked off into other pans or boxes, and kept cool and damp in a light airy position, so as not to force the growth, afterwards transferring to the open border in time to establish themselves before winter sets in. When treated in this manner they very often flower in April. Altogether there are upwards of a dozen species of *Collinsia*, including *C. corymbosa*, with the upper lip of a greyish-blue,



FIG. 42.—*COLLINSIA BICOLOR*.

whilst the lower one is white. These are suitable for growing in large patches, sowing the seed in March, and thinning the seedlings to a distance of 3in.

COLLOMIA COCCINEA is a showy border plant, varying in height from 12in. to 18in., and producing its bright scarlet flowers during June, July, and August. It is a useful bee-plant, and in light warm soils it sows itself every year, the plants so obtained being quite equal to the cultivated ones.

CONVOLVULUS TRICOLOR (*C. minor*) (Dwarf Garden Convolvulus) is a well-known plant, 1ft. high, bearing numerous large richly-coloured flowers, which are white, with a blue limb and a yellowish throat. There are several varieties with white, rose, crimson, and blue flowers; these are fine bedding plants and are also useful when grown in clumps in the border. They require a good warm soil, and should be kept in a medium moist condition.

COREOPSIS is a genus containing several annuals which are largely grown for summer decoration, under the name of *Calliopsis*; they are very graceful border plants, supplying, during summer an abundance of elegant showy flowers, which are greatly appreciated for vases and bouquets. They thrive almost anywhere, even in town gardens; and the bright colours of their flowers render them objects of remarkable beauty and general garden favourites.

Coreopsis Drummondii (Fig. 43) is a lovely plant for beds and borders; it has golden-yellow flowers, with a rich crimson-brown ring surrounding the eye; it is a much-branched species, growing 18in. in height, and flowering in July. *Coreopsis tinctoria*, also known as *C. bicolor*, is a slender annual, growing to a height of 2ft., and opening its flowers in June; they are yellow, with a crimson-brown blotch in the centre. Several varieties, differing in the colour of their flowers, are now grown, the best of which is undoubtedly *nana*. It is very effective for bedding purposes, lasting for a long time in blossom. The following also deserve a place in the garden: *coronata*, a good border plant, 18in. high, with a rich yellow centre, spotted with brownish-crimson, flowers in July;



FIG. 43.—*COREOPSIS DRUMMONDI*.

Engelmanni, with bright yellow flowers, elegant in flower and foliage, 1 ft. high; *Stillmanni*, golden-yellow.

DIANTHUS.—Here, again, we have a genus containing several hardy annuals which are amongst the most decorative of border plants, their brilliant colours rendering them indispensable for summer bedding and also for cut-flower purposes. *D. chinensis* (Chinese Pink) is a plant which has given rise to numerous single and double varieties, and although classed as an annual, it will live for two or three years if the winters are mild. The seed should be sown in February in a cool house, pricking off

the seedlings when large enough into boxes, and transplanting to the open border in April. The plants will commence flowering about July, and will keep on until late in the autumn: they grow to a height of 1 ft., and bear red flowers. The various forms are usually classed under two heads, viz. :

The *Heddewigii* section, containing Crimson Belle, with large handsome flowers of a beautiful blood-crimson colour; height 1 ft. Eastern Queen, with large flowers, marbled rose and white; height 1 ft. *Heddewigii* (*diadematus*) *flore-pleno* (Fig. 44), a Japanese variety



FIG. 44.—*DIANTHUS CHINENSIS*
HEDDEWIGII FLORE-PLENO.

of dwarf and compact habit, with large, very double flowers. Mixed seed of this section may also be procured.

The *laciniatus* section comprises Salmon Queen, a new and fine addition to the annual Pinks, with large, single, beautifully-fringed flowers of a soft salmon colour; height 1 ft. Snowflake, with single fringed flowers, varying from pure white to blush; height 1 ft. Midnight, with deep rich maroon double flowers, shaded with black. Choice mixed seed may also be obtained of the *laciniatus* section, from which a batch of plants may be raised, producing flowers of rich and varied colours, with fringed petals. Seeds of the single and double forms may be obtained separately.

ERYSIMUMS are effective border plants, succeeding well in any ordinary garden soil. *Erysimum arkansanum* (Western Wall-flower) has fine, showy, clear sulphur-coloured flowers, much resembling those of the common Wallflower; it grows from 12in. to 18in. high. *E. Perofskianum* has dense racemes of brilliant orange-coloured flowers, and is a desirable plant for beds, borders, rockwork, edgings, &c.; 1ft. high. For spring decoration, the seed should be sown in September; whilst for summer display it is best sown in March or April.

EUCARIDIUMS are free-flowering annuals of the Evening Primrose family, and somewhat resemble the Clarkias in appearance. If sown out-of-doors in the autumn they are a lovely sight in early summer. The spring-sown seed will come into flower in about eight weeks from the time of sowing, and remain in flower for a long time. *E. Breweri* has light rose-coloured fragrant flowers, is early and of elegant form, and grows only 6in. high. *E. concinnum* has lilac-purple flowers on long stalks. The plant known as *grandiflorum* is merely a variety of *E. concinnum* with larger flowers; a white variety is also in cultivation.

EUTOCA VISCIDA (also known as *Phacelia viscida*) is a lovely little plant, 1ft. high, with intense blue flowers; it is free-flowering, very effective in beds and borders, as well as a good bee-plant.

GAILLARDIA.—*G. amblyodon* grows 2ft. in height, and bears flower-heads of a deep red colour. *G. pulchella* has flower-heads rather larger than the last-mentioned, the ray-florets being of a crimson hue and tipped with bright yellow; flowers in autumn. There are now several forms in cultivation, amongst which are: *Lorenziana*, with large handsome heads, the florets developing into tubular, funnel-shaped structures, in rich shades of red and yellow; height 1½ft. There is a form of *Lorenziana* with double flowers of a beautiful golden shade. *Drummondii* or *picta*, with large red and yellow flowers, and somewhat succulent leaves; height 1½ft. *Drummondii coccinea*, with blood-red flowers having a golden margin; height 1ft.

Mixed seed of the foregoing and other forms may be obtained from the nurserymen. Some people make a practice of putting in cuttings of such kinds as *pulchella* and *Drummondii* in autumn, either inside or under hand-lights, and the plants thus obtained are far superior to those raised from seed. In some catalogues they are classed as biennials, but as they will flower the same year as sown, they have a just claim to the title of annuals. Whether known as annuals or biennials, they certainly take a prominent place amongst our summer bedding-plants on account of their rich and brilliant-coloured flowers, the long duration of the flowering period, and also for the value of the flowers for

bouquets and vases. Large masses in the border or small beds of these annual kinds are very effective.

GILIAS are gay little plants, profusely covered with flowers of various shades of colour; they are very attractive when grown in masses in the border, and the cut flowers are useful for vase work—lasting a long time in water; they are also valuable bee-plants. For spring flowering the seed should be sown in autumn, whilst for summer and autumn flowering, the best time to sow is towards the end of March or beginning of April, they require a rather light rich soil. *G. achilleafolia* (Milfoil-leaved Gilia) has purplish-blue flowers, several together on long peduncles; it grows from 1ft. to $1\frac{1}{2}$ ft. high, and flowers in August; there is also a form with white and another with red flowers, both of them very good. *G. androsacea* (Fig. 45) has lilac, pink, or nearly white flowers, with dark yellow throats; it grows from 9in. to 12in., and flowers during August; it is also known as *Leptosiphon androsaceus*, under which name it is generally described in catalogues. *G. capitata* bears blue sessile flowers in dense heads in July; 18in. to 2ft. high. *G. densiflora* (*Leptosiphon densiflorus*) has soft lilac-coloured flowers; this and the white variety grow 1ft. high, and are plants of chaste beauty, in both flower and foliage; flowers in June. *G. dianthoides*, a showy little plant, 3in. or 4in. high, with lilac flowers; flowers in July. *G. laciniata* has deep lavender-blue



FIG. 45.—*GILIA ANDROSACEA*.

flowers, borne in July; only 6in. high; makes a fine bedding plant; also useful for rockwork and edgings. *G. micrantha* (*Leptosiphon roseus*) produces an abundance of brilliant rose-coloured flowers, with slender tubes an inch long; height 9in.; flowers in July; the plant is covered with numerous long, weak hairs. *G. micrantha aurea* (*Leptosiphon aureus*) is a good form, with bright golden-yellow flowers. *G. nivalis* (Snow Queen) is a lovely little plant, 8in. high, bearing snowy-white flowers with golden centres. *G. tricolor* is a favourite spring- and summer-flowering annual; the typical form has a yellow flower with a lavender or whitish margin, these colours being separated by a deep purple ring; it grows from 9in. to 12in. high. There are several pretty forms including *alba*, with pure white flowers,

and *rubra violacea*, having rose-purple flowers, with a central maroon ring. Mixed seed can also be obtained, producing plants of various shades—lavender, blue, white, orange, &c.

GODETIAS are amongst the most beautiful of hardy annuals for bedding purposes; they are of easy culture, and form sturdy little bushes covered with large and handsome flowers of brilliant and delicate shades; the cut flowers last long in water. They are now classed under *Enothera* by several authorities. Many useful garden hybrids are described under Godetia in catalogues, viz.: The Bride, 1½ ft. high, of light, elegant habit, with a long spike of flowers, white, blotched with crimson. Duchess of Albany, 1 ft. high, with pure white flowers, produced in pyramidal clusters. Duke of York, 1 ft. high, having rich crimson flowers, with a large white centre; Princess of Wales, 1 ft. high, a rather old yet good variety, with rosy-crimson flowers. Princess Henry, 1 ft. high, with satiny blush flowers; each petal blotched with crimson. Lady Albemarle, 1 ft. high, with deep crimson flowers; very showy. Whitneyi, blush-coloured, spotted with crimson. Marchioness of Salisbury, 1 ft. high; one of the most attractive, bearing a profusion of large bright crimson flowers, with a broad white margin; a very effective bedding plant. Gloriosa, 1 ft. high; the darkest-coloured Godetia, with deep blood-red flowers; a handsome plant of compact habit; useful for bedding.

GYPSOPHILA ELEGANS
is a graceful plant of light, fairy-like growth, covered with small lilac flowers; it grows about 18 in high, and is much in demand for cutting. *G. muralis*, 6 in. high, is a lovely little plant with rose-pink flowers; it is useful on the rockery or as an edging plant.

HELIANTHUS (the Sunflower genus) contains several hardy annuals of majestic growth, producing large showy flowers. These are suitable for wild and sub-tropical gardening; the dwarf kinds, with smaller flowers, are useful for grouping in mixed flower borders. *Helianthus annuus* (common

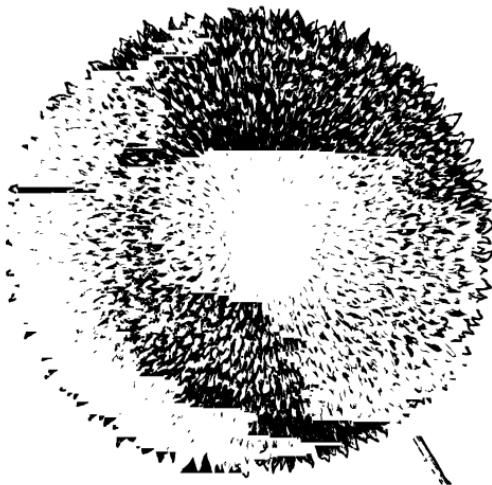


FIG. 46.—*HELIANTHUS ANNUUS GLOBOSUS FISTULOSUS*.

Sunflower) grows 6ft. high, and produces its large yellowish flowers in July. The seed should be sown in a slight hot-bed or in pots in February, transplanting into the open ground when large enough; it may also be sown outside in March. It likes a strong, rich soil, with a quantity of old cow-manure added, and in this compost it will often produce flowers a foot across. There are numerous varieties now in cultivation, one of the best being *H. a. globosus fistulosus* (Fig. 46), with large handsome double yellow flowers, which, when fully developed, assume a globular

form. *Helianthus argophyllus* (Fig. 47) is a charming plant for mixed borders, wild gardens, &c.; the whole plant is covered with a soft, silky, silvery down; the flowers are medium-sized, yellow with a dark centre, the ray florets being very broad. It grows to a height of 5ft., and flowers in autumn. There is really not much difference between this and *H. annuus*. *H. cucumerifolius* (Minature-flowered Sunflower) produces an abundance of small rich yellow flowers, set off with a brownish-black centre; about 3in. across; the plant grows about 3ft. high, and the stem is much branched and often marked with purplish spots; the

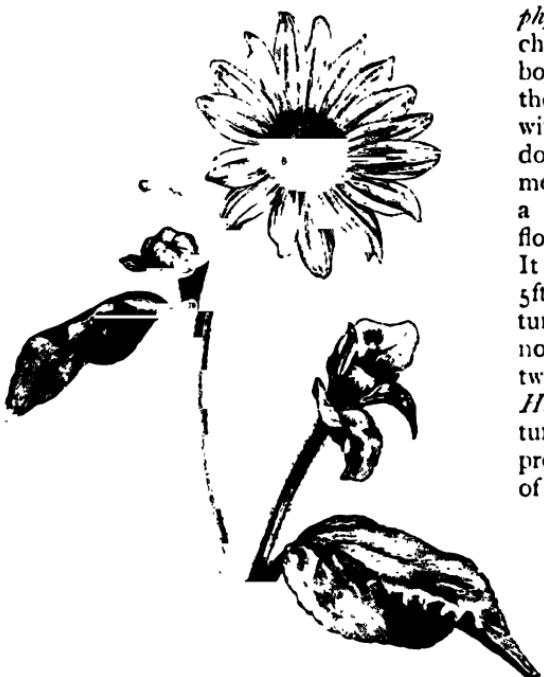


FIG. 47.—HELIANTHUS ARGOPHYLLUS.

leaves are thin and bright green. The form known as *Stella* is new; it bears an abundance of golden-yellow dark-centred flowers, about 4in. across, the petals of which are elegantly twisted. *Henry Wilde* is a distinct variety, bearing branching heads of single flowers, 5in. across, golden-yellow, with dark centres; height 6ft. *H. a. californicus* has heads of large handsome double flowers of a rich yellow; it is more robust in habit than the typical *H. annuus*, and the flowers are darker coloured. The form of this known as *plenissimus* is one of the best of the annual Sunflowers, and ought to find a place in every mixed border of any pretensions.

HELICHRYSUMS (Everlastings) are splendid border plants, producing an abundance of flowers, which are very valuable for the winter decoration of vases. They should be sown inside during the autumn, and planted out in April, or else sown very early in the year (about February) under glass, and planted out during favourable weather in April, so that they may have a chance of making plenty of flowers before the autumn frosts cut them down. They are sometimes sown rather late in the open border, and are consequently just approaching their best when they are spoiled by the early frosts in the autumn. *H. bracteatum* (Fig. 48) is the one generally grown. It reaches a height of 3ft., and produces its pale yellowish flowers in August and September. The variety *compositum* is a grand double form, with various coloured flower-heads. There are now numerous forms of *H. bracteatum* in cultivation, the following being amongst the best: Golden King, with large golden-yellow flowers, having orange centres; 2ft. high. Silver Queen; this has large handsome snowy-white flowers, with centre of orange. Fireball has double fiery crimson flowers; grows 15in. high. Mixed seed can also be obtained producing plants of various colours, viz., white, yellow, orange-scarlet, dark maroon, salmon, purple-rose, &c.

HIERACIUM AURANTIACUM (Hawk-weed) is a common plant, succeeding in any soil, and growing from 12in. to 18in. high, producing eight to ten flowers in each corymb. It begins to flower about June, and keeps up a continuous display for several weeks. For naturalising in the wild garden it is well adapted, and when grown in a large batch proves very effective. There are now several forms of it—one with bright rose-coloured semi-double flowers, another with pure white semi-double flowers, and another with light yellow single flowers with a crimson-brown centre, all of them about 1ft. in height.

HUMULUS JAPONICUS (Japanese Hop) is a quick-growing twiner, 12ft. high, and bears yellowish flowers in July. It is very



FIG. 48.—HELICHRYSUM
BRACTEATUM.

suitable for covering trellises, &c., or for hiding unsightly objects. There is a variegated form, with cream, silver, and green foliage.

HYMENOXYS CALIFORNICA, also known as *Shortia californica*, has a tufted habit. It grows 6in. high, and produces sheets of Daisy-like, bright-yellow flowers, with rich golden centres. An autumn sowing in light dry soil will produce a brilliant display in spring, whilst a batch of spring-sown plants are charming during the summer.

IONOPSISIDIUM ACAULE (Violet Cress) is a lovely miniature annual, 2in. high, and forming dense tufts of foliage, literally smothered with tiny pale lilac flowers. It is very neat in habit, and thrives best in damp or shady situations, such as the foot of rockwork, on old shady walls, &c.; for sowing near rugged steps it is particularly suitable. It flowers in eight or nine weeks from the time of sowing, and very often reproduces itself year after year by self-sowing.

KAULFUSSIA AMELLOIDES is a compact annual, suitable for edgings, fronts of borders, rockwork, &c.; it also forms a "carpet" plant for beds of taller subjects. It grows about 6in. high, and produces its pretty Aster-like flowers in June. In the typical plant they are of a soft azure-blue tint, but in the varieties they differ in colour, some being white, others rose, scarlet, and violet. Although this plant goes under the name of *Kaulfussia amelloides* in nurserymen's catalogues, its proper name is *Charieis heterophylla*, *Kaulfussia* being a genus of Ferns.

LARKSPURS (*Delphiniums*).—The annual Larkspurs are attractive summer bedding-plants, producing a wealth of beauty in their bright-coloured flowers; they are very effective in borders, and when planted amongst shrubs, their flowers of various shades of white, rose, blue, and purple show off to advantage. They vary much in habit, some being from 3ft. to 4ft. high, whilst others do not exceed 1ft. in height; the flowers last for a long time, and are much valued for vase-work.

The seed should be sown in March or April, in the positions where the plants are intended to remain, and the seedlings thinned out to 4in. or 5in. apart. The branching kinds are often sown in the autumn in a light border, and transplanted into their flowering quarters about March, taking care to lift with as good balls as possible. Slugs seem very fond of Larkspurs, and consequently a constant look-out must be kept for them; this is especially needful in the case of the autumn-sown seedlings, or they will all disappear before spring. These annual *Delphiniums* are divided into several groups; for instance, we have the *Ranunculus*-flowered, the *Hyacinth*-flowered, the *Stock*-flowered, and the branching-stemmed kind. The *Ranunculus*-and *Stock*-flowered may be obtained in mixed double varieties,

growing only 1ft. high ; the double Stock-flowered, mixed, 2ft. high ; the dwarf Hyacinth-flowered—the very compact growth of which renders it the best adapted for summer bedding—may also be obtained in various colours. In this latter group the flowers are set on a more tapering spike, and are farther apart than in the Ranunculus- and Stock-flowered.

The branching-stemmed kinds may be obtained in colours of white, carmine, deep blue, &c., the plants growing to a height of 2ft. or 2½ft. They have originated from *D. consolida*, a species with branching stems and deep blue flowers. It is a native of Britain, growing 1½ft. to 2ft. high, and producing its flowers from April onwards throughout the summer. There is a form of this, known as *candelabrum*, which bears pyramidal spikes of variously-coloured flowers, and is especially worthy of extended cultivation.

The Common Larkspur (*Delphinium Ajacis*) is one of the species which is responsible for the large number of beautiful forms now in cultivation. It has showy blue flowers, sometimes red or white, borne in long, loose racemes. It is an erect, hairy annual, growing from 1ft. to 1½ft. high, and producing its flowers about June.

LASTHENIA CALIFORNICA, a small form of *L. glabrata*, is a composite plant, and valuable for beds, borders, &c., when grown in broad tufts. If sown in September and October, it produces a sheet of rich deep golden flowers in spring, just when the Candytufts and early Phloxes are at their best; whilst if sown in April, it is very effective in June and July. It grows from 9in. to 18in. high.

LATHYRUS ODORATUS (Sweet Pea) is a hardy annual climber, growing to the height of 5ft. or 6ft., and is such a universal favourite that its merits scarcely need description. It is certainly one of the very best of our hardy annuals, and whether grown as a floral screen to shut out unsightly objects, as an ornamental plant in the mixed border, or as a source for yielding cut flowers, its position is simply invaluable. Many people grow a hedge of Sweet Peas entirely for this latter purpose, and, at the same time, the hedge forms a very attractive object in the garden. A common practice is that of sowing small patches of seed of mixed varieties towards the back of the herbaceous border, and placing tall, stout bushy stakes around them, so that the Peas may climb up, and in this way form objects of great beauty. When they reach the top of the supports, the points of the stems should be pinched out.

The best time for sowing is in the early spring—March or beginning of April—in soil which has been deeply dug and plentifully manured. Some gardeners make another sowing about the end of May for late autumn work, but this is

unnecessary, as when the earlier sown batches get overgrown and untidy, all that is required is to cut the long growths off with the hedge-shears, and in the course of a few days, new growths, bearing an abundance of flower, will be produced. During hot, dry weather they must not be allowed to suffer from want of water, and at this time, occasional applications of weak liquid manure will prove advantageous.

Varieties of the Sweet Pea are now innumerable, and may be obtained either separately or in mixed colours varying from pure white, as in Emily Henderson, to dark maroon, shaded with black, as in Stanley.

Captain of the Blues produces large handsome flowers, and is said to be the finest Blue in existence. Cupid is a very dwarf variety of Sweet Pea, growing only about 5in. in height ; it is a wonderfully free blossomer, bearing large waxy pure white flowers. There are several other species of *Lathyrus* that are annual, and although none of them rival the Sweet Pea in point of beauty, some of them form very pretty border plants, such for instance as *L. tingitanus*, with red and purple flowers, growing 3ft. high, and flowering in June and July.



FIG. 49.—*LAVATERA TRIMESTRIS.*

LAVATERA TRIMESTRIS (Fig. 49) is an annual, growing from 2ft. to 3ft. high, producing an abundance of large rose-coloured flowers in June. It thrives well in a rich, light soil. The seed may be sown in the open border either in the autumn or in early spring. It is a valuable subject for large borders, and for planting in wild gardens, &c.

There is also a variety known as

alba, with beautiful snowy-white flowers.

LAYIA ELEGANS is a composite annual, growing 1ft. high, and flowering from May to August ; it has yellow flowers, bordered with white. *L. glandulosa* has beautiful pure white flowers, and forms a profuse-flowering plant for beds and borders, remaining for a long time in blossom.

LEPTOSIPHON.—The plants usually found under this name are dealt with under "Gilias."

LIMNANTHES DOUGLASI is a dwarf annual, growing from 6in. to 8in. high, and producing yellow flowers shaded to white, and

very sweet-scented. It is of a spreading, prostrate habit, and proves of great value for spring and summer decoration on banks and rockwork, and as an edging in borders. Being extremely hardy, it is suitable for autumn sowing, and may thus be had in flower very early in spring; if required for summer-blossoming, the best time to sow is in March. This is a plant that should be sown by all bee-keepers, as bees are very fond of the flowers. A white variety is also in cultivation.

LINARIA.—This genus yields several pretty annuals—charming free-flowering plants, useful for beds and borders, the flowers being much prized for bouquets and vases. *L. bipartita* has violet-purple flowers, resembling those of a Snapdragon; it grows from 6in. to 12in. high, and flowers from June to September. The variety *alba* has snow-white flowers, with a golden blotch. *L. maritima* has pale yellow flowers, with an orange palate. It is of the same height as the last-mentioned species, and proves to be an exceedingly free blossomer. *L. reticulata* has deep purplish flowers, grows from 1ft. to 2ft. high, and flowers in June and July. The variety *aureo-purpurea* has deep purplish flowers, with a golden blotch; it is a very striking plant, growing about 11ft. high. *L. tristis* is a charming plant, growing about 9in. high, and flowering in July; it has yellow flowers, blotched with crimson, and forms a suitable subject for edging, bedding, or for rockwork.

LINUM GRANDIFLORUM (Red Flax) is a useful annual, growing 1ft. in height, and producing its crimson flowers in June and July. The seed may either be sown in February or March under glass, and the seedlings transferred to the open border as soon as large enough; or it may be sown in April in the position where the plants are intended to flower. *L. grandiflorum coccineum (rubrum)* is one of the most brilliantly coloured of summer annuals, producing flowers of a glowing crimson hue. It may be had in flower from May to October by successive sowings, and as it is very free-flowering it forms an exceedingly ornamental plant for beds and borders.

LUPINUS (Lupin) is a genus containing several handsome annual species, and from which have sprung innumerable beautiful hybrids. They are all graceful plants, the elegant racemes being much prized for cutting. The dwarf varieties form capital beds by themselves, whilst the taller-growing ones are effective in mixed borders. *L. Hartwegii* has blue and pink flowers; it grows from 1½ft. to 2ft. high, and flowers in July. *L. luteus* is the well-known dwarf yellow Lupin; it grows 1ft. high, and produces its fragrant flowers in July and August. *L. Mensiesii* is a handsome bushy plant, covered with racemes of showy bright yellow flowers, and grows 1½ft. high. *L. hybridus atro-coccineus* is one of the best, growing 2½ft.

high, and producing elegant racemes of crimson-rose-coloured flowers, tipped with white. *L. nanus* (common Dwarf Lupin) is a lovely plant for beds and the fronts of borders; it grows only 1 ft. high, and produces its lilac and blue flowers in July. The variety *albus* has pure white flowers. *L. subarnosus* has handsome deep blue flowers, with white eyes; it grows 1 ft. high, and is much prized for cutting. *L. Cruikshankii* is an erect-branched annual, growing 3 ft., and bearing blue, white, and pink flowers during July and August. It is a splendid border plant, and goes by the name of *mutabilis versicolor* in some nurserymen's catalogues.

MALOPE TRIFIDA GRANDIFLORA is a showy plant for large mixed flower-borders and for shrubberies. It grows to a height of 2 ft., and bears dark glossy rose-crimson flowers in June and July. There are two varieties: *alba*, with pure white flowers, and *rosea*, with flowers of a pretty blush shade.



FIG. 50.—*NEMOPHILA INSIGNIS*.

fron anthers. The seed may be sown in the borders in April and May for flowering in June and July; another sowing might be made in June for flowering in late autumn. It is always advisable to thin the seedlings early to a suitable distance apart, as they then grow much stronger, and flower much freer than if left crowded. The plants like a rich, moderately-heavy soil, and especially delight in a cool, moist situation; but seed might

MATHIOLA BICORNIS (Night-Scented Stock) has lilac flowers, which in the morning and evening, and also after a shower of rain, emit a delightful fragrance perceptible at a considerable distance. It grows 1 ft. high, and flowers in spring.

MIGNONETTE (*Reseda odorata*) is a universal favourite, being grown in almost every garden, however small. It grows about 1 ft. high, and may be had in flower outdoors from May to October. The flowers are yellowish-white in colour, with saf-

with advantage be sown on dry banks, the margins of gravel-paths, and in any dry, sunny situations, as although the plants do not grow so freely, the fragrance of the flowers is more powerful. They are suitable for either border or pot-culture, and the flowers are much prized for cutting, as they emit such a delightful perfume, and last so long in water. Numerous varieties are now offered by the trade.

NEMOPHILAS are charming little annuals, very uniform in height, comprising colours of strong contrast; they are of the easiest culture in any ordinary garden soil, and are very useful for the adornment of rockeries, small beds, or for ribbon borders and edgings. Some pretty combinations may be produced by arranging masses of them in harmonising colours. For a spring display seed should be sown early in August, preferably where the plants are intended to flower, and for summer-flowering the best time to sow is in April. *Nemophila insignis* (Fig. 50) has bright blue flowers with white eyes; it grows to a height of 18in. Several fine varieties have originated from it, viz., *grandiflora*, with large clear light blue flowers having white centres, more than an inch across; it grows only 9in. high, and for beds, borders, and ribbons is very effective. *N. insignis alba* has pure white flowers, and forms a charming companion to *grandiflora*. *N. i. marginata* has blue flowers with a white edge. *N. maculata* is a species growing 6in. high, and is to be seen at its best about June. It is a hairy plant, and bears large handsome white flowers, with a violet blotch on each lobe of the corolla. *N. atomaria* (*Menziesii*) has white flowers, with purple spots.

NIGELLAS are graceful border plants with Larkspur-like foliage, the flowers being partially hidden by the curious fine feathery green bracts. The seed should be sown towards the end of March or in April, in light warm soil in the open border, and the seedlings thinned out to 6in. apart. *N. damascena* (Love-in-a-Mist) is the one most generally grown; it has bright-green finely-cut foliage, and bears large white or blue flowers surrounded by mossy bracts. It attains a height of from 12in. to 18in., and flowers in July. The double-flowered variety, *flore-pleno* (Fig. 51), is very good. *N. hispanica* (Devil-in-a-Bush) has showy blue flowers, with blood-coloured stamens; the varieties *alba* and *atropurpurea*, with white and purple-violet flowers respectively, are worth growing.



NOLANAS are trailing plants with *Convolvulus*-like flowers, suitable for rockeries or mixed borders. *N. atriplicifolia* has blue, white, or yellow flowers; it grows 6in. high, and flowers in July. The seed should be sown in the open border in April, and the plants well thinned out.

PAPAVER (the Poppy genus) contains several annual species which are valuable decorative border plants; the flowers are produced in great abundance, and are much prized for vase-work. The seed should be sown in March or April where the plants are intended to flower. *Papaver Hookeri* is an ornamental bushy plant, 3ft. to 4ft. high, flowering in autumn. The flowers vary in colour from pale rose to crimson, each petal having a white or a black spot at the base. *P. Rhoeas* (common Corn Poppy) has scarlet flowers, which are produced in June. It grows about 1ft. in height. Under cultivation it has produced many varieties with both single and double flowers, amongst which is *flore-pleno* (Fig. 52), with double flowers. The following garden strains have also originated from this species, viz.: the Shirley Poppy, the Carnation-flowered, and the Ranunculus-flowered. Shirley Poppies, an exceedingly popular race of single Poppies, raised during recent years by the Rev. W. Wilks, are all graceful plants, yielding flowers of various colours, embracing delicate shades of rose, pink, and blush. By sowing in spring and early summer for succession, they may be had in flower from May to October. The seed is very fine, and should, on this account, be sown quite thinly, and merely



FIG. 52.—PAPAVER RHœAS
FLORE-PLENO.

sprinkled over with a little finely-sifted soil, afterwards thinning out to 6in. apart. They grow about 1ft. in height. Carnation-flowered, with large handsome double-fringed flowers, of various brilliant colours; grows about 2½ft. in height. Ranunculus-flowered, or French Poppies, have fine double flowers, with thin petals; flowers of various colours; height 1ft. *Papaver setigerum* is a species with white or violet-coloured flowers, growing from 1ft. to 2ft. high, and flowering in July. It is very like the Opium Poppy, but differs in having the teeth of the leaves ending in stiff bristles, and in the stem, as

well as the leaves being hairy. *P. somniferum* is the Opium Poppy, and produces in July variously coloured flowers from white to crimson; it grows from $2\frac{1}{2}$ ft. to 4 ft. in height, and has given rise to a number of garden forms, of which the Paeony flowered is very distinct, with double Paeony-like flowers, having broad petals, varying in colour from white to crimson. Danebrog (Victoria Cross Poppy, Fig. 53) grows from 1 ft. to 2 ft. high, and has scarlet flowers with a white spot at the base of each of the petals. Murselli (Mikado Poppy) is another strain of *P. somniferum*, growing 2 ft. high, and producing flowers in white and scarlet. Seed of these poppies may be obtained in either named or mixed varieties; they ought to be grown largely in shrubberies, wild gardens, and woodlands, and for distant effect generally.

PHACELIAS are showy little plants with white, blue, or violet flowers; they are of easy culture in any ordinary garden soil. *P. congesta* is one of the best, growing from 9 in. to 18 in. high, and producing numerous blue flowers in dense heads during June. *P. tanacetifolia* has bluish-pink flowers; it grows to a height of 2 ft., and flowers in June.

PLATYSTEMON CALIFORNICUM (Californian Poppy) is a beautiful plant on rockwork and in flower-borders, and is quite easily grown in any ordinary garden soil; it grows 1 ft. high, and bears numerous pale cream-coloured flowers during summer. It may be sown in either spring or autumn.

SANVITALIA PROCUMBENS is a free-flowering, trailing plant, very effective for small beds, edgings, and for rockwork. It grows only 6 in. high, and yields its miniature Sunflower-like blossoms in July. The ray-florets are of a rich yellow colour, whilst those of the disk are brown. The double-flowered variety, *flore-pleno*, is by far the showiest, and has rich golden-yellow flowers resembling those of a small Ranunculus.

SAPONARIAS (Soapworts) are dwarf hardy annuals, &c., of the Pink family, very useful for beds and edgings in summer, and when sown in autumn are valuable for spring gardening.

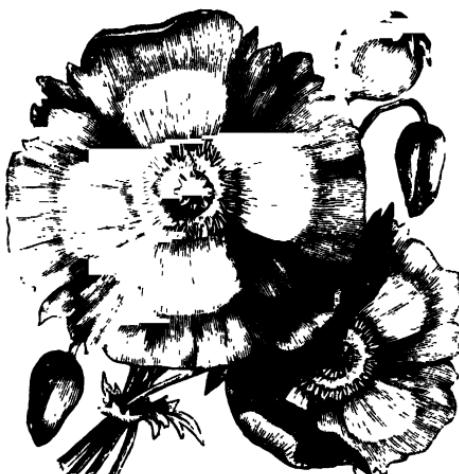


FIG. 53.—PAPAVER DANEBROG.

S. calabrica has pink star-shaped flowers ; it grows 6in. high, and flowers in August. There is also a variety, *alba*, with pure white flowers.

SCABIOSA (Scabious) is a genus containing several annuals which produce a fine effect in beds and borders, whilst the handsome heads of flowers are much prized for vases and bouquets. If sown in February under glass and again in March or April in the open border, the plants will flower the same year ; it is, however, often treated as a biennial by sowing in May or June, for flowering early the following summer. *S. atropurpurea* has deep crimson flower-heads, and is sweetly scented. It grows from 2ft. to 3ft. high, and flowers in July and August. There are numerous varieties, some with double, and others with single flowers in various shades of crimson, purple, and yellow. Then there are forms with distinctly margined foliage as well as those with flowers both margined and sheathed. *S. atropurpurea*, as well as being grown extensively for the embellishment of the outdoor flower garden, is also sometimes cultivated in pots for flowering in winter. For this purpose seed should be sown during early summer, and the young plants potted off singly when large enough, and housed in a cool frame.

SILENES (Catchflies) are free-flowering annuals, suitable for growing in beds, borders, or on rockwork ; for spring gardening they are of great value. If required for spring gardening the seed should be sown early in autumn, and for general summer decoration, March or April is the best time to sow. *S. pendula* is a species growing 1ft. high and producing an abundance of bright rose-coloured flowers ; the variety *compacta* is one of the best and most useful of the annual Silenes, forming tufts not more than 6in. high, smothered with numerous bright pink flowers ; a white variety is also in cultivation.

SPHENOGYNE SPECIOSA, now known as *Ursinia pulchra*, is a showy annual of dwarf, spreading habit, with rich golden-yellow Marguerite-like flowers. It grows from 6in. to 1ft. high, and forms a charming plant for beds and borders, and is also useful for cutting.

VENUS' LOOKING GLASS (*Specularia Speculum*) is a pretty, free-flowering annual, suitable for beds or for rockwork. It grows 1ft. high, and in July is covered with bright purple bell-shaped flowers, somewhat resembling those of a Campanula. It is one of the showiest of our hardy annuals. There is also a white variety in cultivation.

VERONICA SYRIACA is a dwarf hardy species, growing 6in. high, and bearing bright blue flowers. It is best sown in autumn for spring flowering. The variety *alba* is also

useful for the same purpose, the plants being literally covered with flowers in the spring.

VIRGINIAN STOCKS.—*Malcolmia maritima* is a well-known free-flowering annual, easy of culture in any ordinary garden soil. If sown in April, it will flower in June, and by successional sowings it may be had in flower from then until September. It grows from 6in. to 12in. high, and has lilac, rose, red, and white flowers.

VISCARIA (now included under *Lychnis*) is a genus which yields several beautiful plants suitable for small beds or for masses in the border. In nurserymen's catalogues they are described as hardy annuals, whilst some authorities prefer to class them as perennials. Seed may be sown in autumn for spring flowering, and again in spring for summer display.

V. cardinalis has brilliant magenta flowers, and grows 1ft. in height. *V. oculata* has bright pink flowers, with a purple eye. It grows from 8in. to 12in. high, and flowers in July. A form having scarlet flowers striped with white is known as the "Carnation-striped." It grows 1½ft. high.

WHITLAVIA GRANDIFLORA (Fig. 54) is a profuse-blossoming annual, with pretty Gloxinia-like flowers, and is charming in beds and borders during spring and summer. It grows 1ft. high, and has numerous violet-purple flowers. The variety *alba* differs only from the type in having pure white flowers. The variety

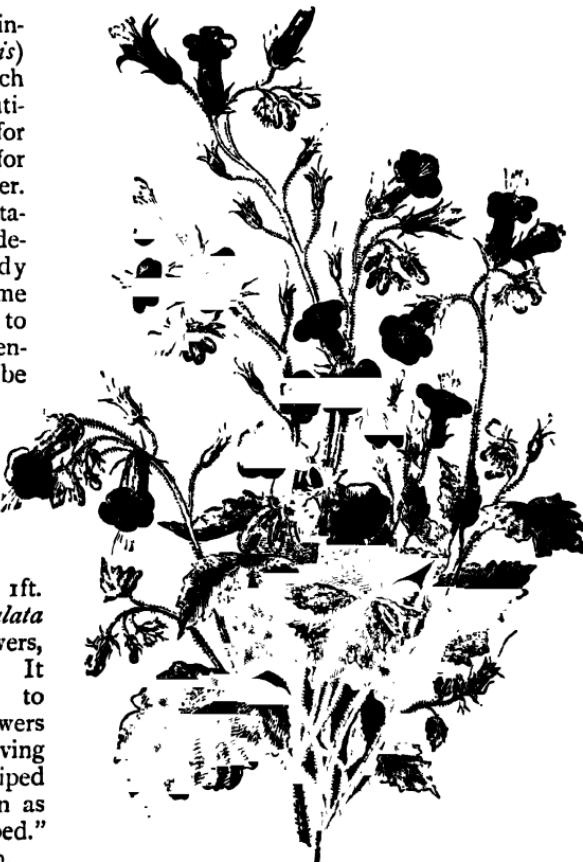


FIG. 54.—WHITLAVIA GRANDIFLORA
(PHACELIA WHITLAVIA).

known as *gloxinioides* has deep lavender-blue flowers, with white throats. The species *W. grandiflora* is now known as *Phacelia Whitavia*.

XERANTHEMUM ANNUUM is one of the prettiest of hardy everlasting annuals. It grows to a height of 2ft., and flowers in July; the seed should be sown in April, in a light rich soil. Although the typical plant has purple flowers, there are now white, yellow, and rich rose-coloured forms; these are not only ornamental as border plants, but the cut flowers are also highly valued when dried for the winter decoration of vases, &c.

Half-hardy Annuals.

These are plants that cannot stand our winters outside, and consequently have to be sown in spring. In favoured localities as to soil and climate, nearly all this class of plants may be sown in light rich soil in the open border when all fear of frost is gone, say about the end of April. If wanted in flower early, the assistance of glass and a slight bottom-heat are necessary. Make up a slight hot-bed frame with fresh stable manure in March, and place several inches of light rich soil over; when the heat is on the decline the seed may be sown thinly, and the frame kept close and shaded until the seedlings appear. As they burst through the soil, they should be gradually inured to light and air, so as to avoid a weak, spindly growth. If time will permit, it is best to transplant into a gentle hotbed for a few weeks before removing to the open border; if not, they ought to be thinned, and attention paid to weeding and watering during their stay in the seed-bed.

RAISING UNDER GLASS.—Another system very often followed in raising half-hardy annuals, is to sow the seed in pans, pots, or boxes in the greenhouse, always using good rich light soil, composed of fine loam and well-decayed leaf-mould, with a fair sprinkling of sand added to keep it open. The pans or boxes should be well drained, the seeds sown broadcast, and covered with the finest soil. It is a recognised rule when sowing seeds of this class of plants, or as a matter of fact any seeds under glass, that they should not be covered with more than their own depth of soil; for outside sowing, however, they are usually covered a little deeper. The soil should then be kept in a uniform moist condition: a sheet of glass placed over the pan or box will tend to keep it moist by preventing excessive

evaporation, and consequently less water will be required. When watering is necessary, it should be done with a fine rose, and with great care, remembering that a strong flow of water will disturb the seed, probably washing it all to one side of the pan, if not washing it away altogether. A good plan when watering very fine seeds, and also the seedlings when they appear, is to stand the pots in water up to their rims, so that the water moistens the soil from below; when doing this, care must be taken that the water does not flow over the side of the pot, or serious consequences will follow. The glass must be removed from the pots as soon as the seedlings appear. The young seedlings should have plenty of light, but be shaded from strong sunlight. As soon as they are strong enough, they should be pricked off to give them more room. This may be done into pans, boxes, or even into frames, and when they are thus established, they may be gradually hardened off, and planted out into the open border about the end of May or beginning of June.

The following is a select list of kinds, and an extended list of other desirable varieties will be found at the end of this Chapter.

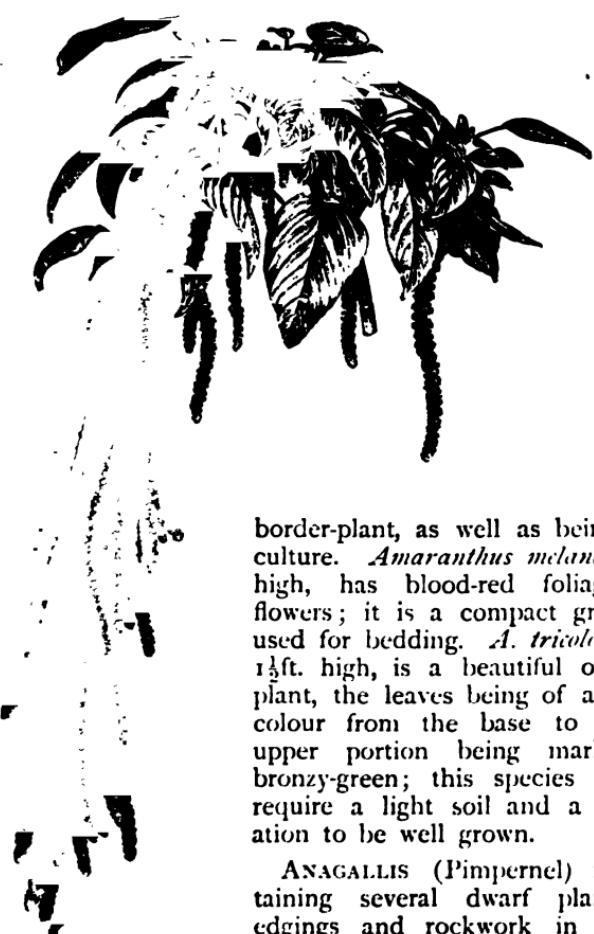
AGERATUMS are useful bedders, flowering continuously until destroyed by frost; the dwarf forms are charming for edgings and for small beds. *A. mexicanum* is of free, branching habit, growing 1ft. high; it has lavender-blue flowers. When grown for bedding purposes it may be either pegged down like the Verbena or allowed to grow to its full height. Several forms of Ageratum have originated under cultivation, amongst which are: Imperial Dwarf, 6in. to 9in. high, with porcelain-blue flowers. Blue Perfection, 9in. high; a compact variety with dark blue flowers. Snowflake, 9in. high; a free-flowering showy variety, with pure white flowers. *luteum*, 1½ ft. high; a new yellow Ageratum, useful for cut flowers. There is also a variety with variegated leaves.

ALONSOA LINIFOLIA is a charming little annual, 1½ ft. high, with graceful dark green foliage and bright orange scarlet flowers. *A. Warscewiczzii*, 1½ ft. to 2ft. high, has bright crimson flowers. These are the best of the species, and are quite easy to grow, either in the borders or in pots. The seed may be sown in March, and the plants will flower in June and July.

AMARANTHUS is a genus containing several effective ornamental foliage plants invaluable for bedding purposes. The seed should be sown in a hotbed frame in April, and the seedlings transplanted when large enough into another hotbed, finally transferring to the open border early in June. *A. caudatus* (Love-Lies-Bleeding) (Fig. 55), 2ft. to 3ft. high, has dark, pendent

racemes of purplish flowers; it is an effective plant in the flower border, and when grown in large vases, its peculiar drooping habit shows off to advantage. A creamy-white variety

is also in cultivation, and although not so ornamental as the type, it forms a nice contrast. They usually flower about August. *A. hypochondriacus* (Prince's Feather), 3ft. to 4ft. high, has purple foliage, and large dark crimson erect flower-spikes. It flowers in July, and forms a very ornamental



border-plant, as well as being useful for pot-culture. *Amaranthus melancholicus ruber*, 1ft. high, has blood-red foliage and crimson flowers; it is a compact grower, and largely used for bedding. *A. tricolor* (Joseph's Coat), 1½ft. high, is a beautiful ornamental-leaved plant, the leaves being of a glowing crimson colour from the base to the middle, the upper portion being marked yellow and bronzy-green; this species and its varieties require a light soil and a rather warm situation to be well grown.

ANAGALLIS (Pimpernel) is a genus containing several dwarf plants, suitable for edgings and rockwork in sunny situations. *A. indica*, 1ft. high, is a trailing plant, producing numerous small deep blue flowers in July. *A. grandiflora*, 6in. high, has various coloured flowers—blue, deep red, &c.—and is seen at its best from May onwards until the end of summer; it is very compact and neat in habit. *A. linifolia*, 9in. to 12in.

high, has large brilliant blue flowers, 3in. across; flowers in July. There are numerous varieties, including *Breweri*, 6in. high, with rich scarlet flowers; *sanguinea*, 6in. high, with beautiful

FIG. 55.—AMARANTHUS CAUDATUS.

ruby-coloured flowers; *Wilmoreana*, 6in. high, with bright purple flowers and yellow eyes.

ASTERS (CHINA), known botanically by the name of *Callistephus chinensis*, form a splendid class of plants, the decorative value of which cannot be over-estimated. For grouping in flower borders, or for filling beds, they are indispensable, whilst for pot culture and cut flowers they are also much prized. To see them in their full beauty, however, they require to be grown in masses, and when well cultivated, they produce an abundance of fine flowers. To have a succession of Asters, the seed should be sown at intervals, from the end of February to the end of May. The first sowing should be made in a slight hotbed frame, pricking out the seedlings into another frame when large enough, gradually hardening them off, and transferring to the open ground in May. The second sowing should be made two or three weeks later in a cold frame, treating the seedlings in the same manner as the first-sown batch. As soon as the seeds germinate in the frames, they must have a plentiful supply of air, being careful to avoid chills, or a weak batch of plants will be the result. Attention must also be paid to shading during hot sunshine, or the tiny seedlings will

be scorched. For succession, a sowing might be made in the open ground in April, and again in May, in a good, rich, loamy soil, and this batch will flower after the earlier sowings are over. In transplanting from the frames to the open borders, the plants should be lifted with good balls of earth attached; choose showery weather for the operation, and plant in good soil, which ought to have been previously enriched by the application of well-rotted farmyard manure. If the weather turns dry, watering must be attended to, so as to avoid, as far as possible, checking the plants in their growth. They should be planted from 9in. to 12in. apart each way, and this will admit of the hoe being used for keeping the surface open and free from weeds. When the plants are well established, and have made a mass of roots, it is a good plan to give them a good mulching of rotten manure from an old hotbed; this



FIG. 56.—TRUFFAUT'S PÆONY-FLOWERED ASTER.

will materially help them at a time when they are in need of nourishment, viz., when they are producing their flowers.

The varieties are very numerous, all of which have originated from the one Chinese species, *Callistephus chinensis*; they are divided into several sections, according to height, habit, kind of flower, suitability for bedding, pot-culture, &c. The



FIG. 57.—VICTORIA ASTER.

Paeony-flowered Asters (Fig. 56) are vigorous plants, growing upwards of 2ft. in height, and producing large incurved flowers of various colours; useful for bedding and for flower borders. Victoria Asters (Fig. 57) are amongst the most popular for either bedding or pot-culture; they are of pyramidal habit, 1ft. in height, producing an abundance of large globular flowers, perfectly double and reflexed. There is also a dwarf form of Victoria resembling the type in everything but size. Dwarf Chrysanthemum-flowered Asters (Fig. 58), if sown at the same time as the Victorias, will flower later, forming a nice succession; they are of dwarf, compact habit, and for the size and brilliancy of the flowers are equal to the taller sections; the flowers are full and reflexed, and produced in such abundance as almost to hide the foliage; height 1st. Betteridge's Prize Quilled, though not such effective border-plants, are splendid for exhibition purposes; they are globular, each petal forming a perfect quill, with a curious outer ring of guard-petals at the base of the flowers. Comet Asters, 1st. to 1½ft. high, have curled petals like Japanese Chrysanthemums; useful for beds or for cut-flowers. Crown, or Cockade Asters, 1½ft. to 2ft. high, are suitable for bouquets and bedding; the flowers are large, flat, and produced in abundance; the centre of each flower is white, surrounded by



FIG. 58.—CHRYSANTHEMUM-FLOWERED ASTER.

a distinct belt of lavender, bright crimson, violet, or rose. Dwarf Queen Asters, 9in. high, are of spreading growth, exceedingly free-flowering, and very useful for cutting. These are the most important kinds of China Asters grown in our gardens. Seeds of each section may be obtained either in named varieties or in choice mixtures, the latter producing plants of many beautiful shades of colour.

BALSAMS (*Impatiens*) are amongst the most showy of summer- and autumn-flowering half-hardy annuals, suitable either for filling beds and borders, or for pot-plants. The seed should be sown about the middle of March in sandy soil under glass, pricking out the seedlings into thumb-pots when large enough, and removing into larger sizes as required—never allowing them to become pot-bound; they should be grown as near the light as possible, and be gradually hardened off by removing to a frame about May, finally planting out in the open during June. Balsams require a lot of water, and if the supply is short, they will suffer in consequence; a sharp look-out must also be kept for slugs and snails, or they will very soon play sad havoc amongst these tender subjects. There are several sections of Balsams, amongst which are the Camellia-flowered, with handsome double flowers, resembling Camellias in form and in the arrangement of the petals; these grow $1\frac{1}{2}$ ft. high, and may be procured in several varieties. The Rose- and Carnation-flowered differ only in the flowers, which resemble, more or less, those of the Rose and Carnation respectively. There is also a miniature Balsam, growing only 9in. high, suitable for pot-culture and bedding. This, as well as the kinds mentioned above, may be obtained in many beautiful varieties.

BRACHYCOME IBERIDIFOLIA (Swan River Daisy) (Fig. 59) is a plant growing 9in. high, flowering during summer and autumn, and producing an abundance of beautiful Cineraria-like blue flowers. It is admirably adapted for small beds, edgings, and rockwork.

BROWALLIA ELATA, $1\frac{1}{2}$ ft., is often grown as a half-hardy annual, and forms a charming plant for flowering in July and



FIG. 59.—BRACHYCOME IBERIDIFOLIA.

It is admirably adapted for small beds, A white variety is also grown.

August in warm localities. The typical plant has deep blue flowers, but forms with white and pale blue flowers are also known.

CLINTONIA PULCHELLA, properly called *Downingia*, is a charming little plant, 6in. high, admirable for rockwork, bedding, or for edgings; it has blue, white, and yellow flowers, produced during the late summer.

COSMOS BIPINNATUS (Fig. 60), 2ft. to 3ft., is a graceful plant, with fine feathery foliage and large flowers like single Dahlias; they are rose or purple in colour, with yellow disks. Several varieties have originated with white, pink, and rose-coloured



FIG. 60.—COSMOS BIPINNATUS.

flowers, whilst the form *sulphureus* has rich clear yellow flowers, and does not grow quite so tall as the others.

DATURAS (Thorn Apples).—Handsome foliage plants, 2ft. to 3ft. high, with large trumpet-shaped flowers. The seed should be sown on a hot-bed in early spring, the plants afterwards potted up singly, and planted out in June. *D. ceratocaula*, white, tinged pink, fragrant; *D. Cornucopiae*, rich violet, with white throat; and *D. Wrightii* (*D. meteloides*), white, edged lilac, are some of the best, with perhaps Golden Queen.

GRAMMANTHES GENTIANOIDES, 3in. high, forms a little tuft of fleshy leaves, and is covered with numerous star-shaped flowers, varying in colour from pale yellow to deep red. It flowers in July. The seed should be sown in heat, during March, and the seedlings planted out in May in a dry, warm, sunny situation. It is suitable for rockwork, edgings, and also for pot culture.

HELIPTERUM SANDFORDI (*Humboldtianum*) is a dwarf, branched everlasting, growing from 12in. to 18in. high, and flowering about July; it has dense corymbs of golden-yellow flowers which are prized for bouquets in both summer and winter. The plant in a young state is quite woolly.

JACOBÆA.—See *Senecio elegans*.

LOBELIAS are indispensable for bedding. They are readily increased by either seeds or cuttings. Seeds may be sown in February or March in pans of light sandy soil (covered but slightly, as they are very minute) and stood in a warm house. They should afterwards be pricked off into boxes and kept under glass until nearly bedding time, when they should be hardened off. They may also be sown thinly in rows, in a frame close to the glass, and transferred direct to their flowering quarters. As they are liable to sport from seed, the best way to perpetuate any special variety is by cuttings; these may either be inserted in autumn, or a few old plants may be taken up, potted, and kept in a frame during the winter. Early in the spring remove them into a warm, moist atmosphere, where they will soon make an abundance of cuttings; these may be taken off, placed in a warm propagating-frame, and when rooted pricked out into boxes and hardened off before bedding-out time. In this way any amount of plants of uniform habit may be obtained. *L. Erinus compacta* is of neat and compact habit, suitable for edgings, &c.; there is also a white-flowered variety, and one with golden foliage. *L. pumila magnifica* is an excellent bedder, with bright blue flowers; it grows only 3in. high. *L. ramosa* is a taller-growing form, reaching a height of 9in.; it has deep purple-blue flowers. There are also numerous good named varieties, of which Cobalt Blue, Swanley Blue, Crystal Palace, and Emperor William, are amongst the best.

MARIGOLDS (FRENCH and AFRICAN) are used for the embellishment of mixed flower-borders, and also for summer-bedding. The seed should be sown during the month of April in a frame (cold or heated), pricking out the seedlings into another frame before finally transferring to the beds or borders about the end of May. Seed may also be sown in May, in the place where the plants are intended to flower, thinning the seedlings to 8in. or 9in. apart. Marigolds should be grown in a fairly rich, light soil.

The African Marigold (*Tagetes erecta*) is very effective for large beds, the fronts of shrubberies, &c. It is of fine, bold aspect, 2ft. in height, and produces large, handsome flowers, chiefly in shades of lemon and orange. There is also a dwarf variety. The French Marigold (*Tagetes patula*) is splendid for bedding, for general mixed borders, and also for cutting. The taller varieties produce the most perfect flowers, but the dwarf ones are the best for beds and for small gardens. The flowers are produced

in shades of yellow and brown, beautifully striped and marked. Several named varieties may be procured, including Dwarf Golden, a fine yellow form; 1ft. high. Liliput, 6in. high, with rich brown flowers, edged with golden-yellow. Miniature Queen, 6in. high, with crimson and yellow flowers. The last two form lovely little bushes, and are valuable for small beds, edgings, &c. In growing these double varieties, a few are almost sure to come single, and these should be pulled up. Seeds of each section, selected from fine strains with double flowers, may be obtained from any of our seedsmen, either in named varieties or in mixed shades of colour.

MARTYNIA FRAGRANS, 1½ft. to 2ft. high, thrives in a warm, sheltered position. It has large crimson Gloxinia-like flowers, sweetly-scented, and followed by curious horned fruit. It flowers in June.



FIG. 61.—*NEMESIA STRUMOSA SUTTONI.*

banks and warm nooks in the rock garden. It has Daisy-like flowers, rosy-pink in colour, with purple centres. It does not like transplantation, and should therefore be sown in the open in sandy soil. The variety *album* has white flowers, with purple centres.

MINA LOBATA (*Ipomoea versicolor*) is a fine climber, suitable for pillars, trellises, &c. The flowers are borne in twin-like

MESEMBRYANTHEMUM CRYSTALLINUM (Ice Plant) is a trailing annual, having ornamental foliage covered with ice-like globules. It will trail 3ft. or 4ft. in the season, and produce its inconspicuous white flowers from May to August. The seed should be sown in heat in March, and the seedlings be planted out from 6in. to 9in. apart during June. It is a valuable plant for dry, sunny banks, rockwork, carpet-bedding, &c., and is sometimes grown for garnishing purposes. There are also varieties with yellow and purple flowers. *M. tricolor* is a dwarf-growing annual, from 4in. to 6in., suitable for sunny

racemes, and are, at first, of a scarlet shade, afterwards changing to orange, and then to pale yellow. They appear about June. The seed should be sown in February or March in a warm house, and the seedlings potted off singly into small pots, ready for planting outside as soon as the weather is favourable.

NEMESIA STRUMOSA SUTTONI (Fig. 61) is a comparatively new half-hardy annual from South Africa. It grows about 1 ft. high, and produces numerous flowers of various shades of colour from white to crimson. It commences to flower in June or July, and continues until late in the autumn. The seed should be sown in March, and the seedlings planted out about May.

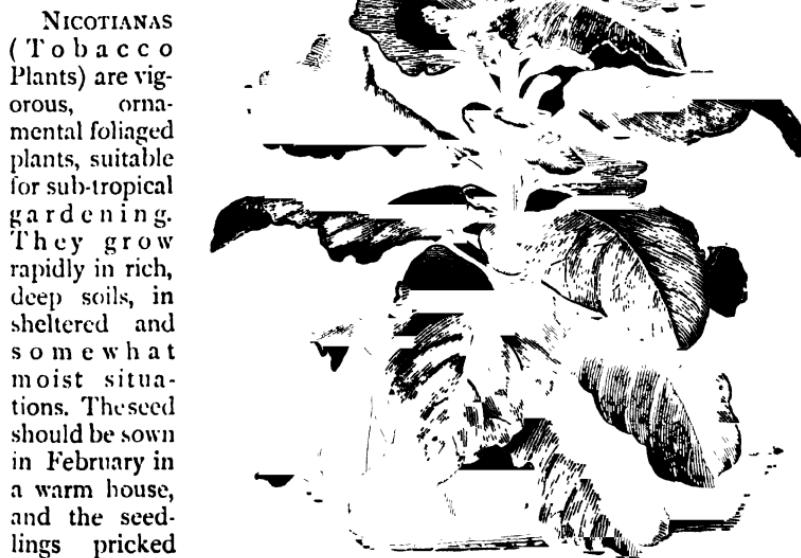


FIG. 62.—*Nicotiana wigandoides*.

Nicotiana affinis, 3 ft. high, is a valuable pot- and border-plant; it has

large pure white flowers, which during the day are partially closed, but in the evening open, and emit a delicious fragrance; they are produced from July onwards. *N. atropurpurea grandiflora* grows 5ft. high, and has reddish-purple flowers. *N. wigandoides* (Fig. 62) is a stately plant, growing 5ft. high, and is especially suitable for sub-tropical bedding; it has immense

handsome leaves and yellowish-white flowers, produced in large drooping panicles.



FIG. 63.—PHLOX DRUMMONDII.

and continuing a blaze of beauty until cut off by the late autumn frosts. It may be either grown in beds by itself, or used as a carpeting plant for other taller-growing subjects, such as Standard Roses, &c. The seed should be sown early in March, in a gentle heat, and the seedlings planted out in May or June. There are now numerous varieties, varying in the colour of their flowers from white to purple, and growing about 1ft. in height; the variety *cuspidata* and its named forms grow only 6in. high, and produce white, rose, red, violet, and scarlet flowers.

PORTULACAS are brilliantly-coloured annuals, requiring a dry, warm, sunny situation, and a light soil; they are excellent for small beds, rockwork, and for edgings. *P. grandiflora* (Sun Plant) grows 6in. high, and in June and July produces its flowers

NYCTERINIA (ZALUZIANSKIA) SELAGINOIDES, 4in. high, is a charming little plant for pots, edgings, or rockwork. The seed may either be sown under glass in March, or in the open air in April. It bears clusters of star-shaped flowers in May—white, with a yellow eye, very fragrant at night. *N. capensis* has white flowers with brown eyes; it is like the last-mentioned species in habit and stature.

PHLOX DRUMMONDII (Fig. 63) is certainly one of the best of our half-hardy annuals, producing an abundance of flowers of various hues, commencing in July

in shades varying from white to purple. They are borne three or four together. Mixed seed is now offered by our seedsmen, producing plants with various coloured flowers.

RHODANTHE MANGLESII is a charming everlasting annual, excellent either for beds or for pots in the conservatory; the dried flowers are also much prized in bouquets for winter decoration. It grows about 1st., and produces its bright rose-coloured flowers in June.

RICINUS COMMUNIS (Castor-oil Plant) and its varieties are remarkable for their large and picturesque foliage, which makes them excellent subjects for subtropical gardening. The seed should be sown singly in small pots in March, and placed in heat. As the seedlings fill the pots with roots, they should be potted on and kept growing freely, finally hardening off, and planting out in June. They reach a height of from 3ft. to 5ft., and produce their greenish flowers in July. *Gibsoni* has bronzy-purplish leaves. *sanzibarensis* is a noble plant, 6ft. to 8ft. high, having handsome light green leaves, 2ft. across, with whitish ribs. Its variety *enormis* has large brown purple foliage, changing to dark green or red when older.

SALPIGLOSSIS SINUATA (or *varabilis*) (Fig. 64) is a splendid annual, 2ft. high, flowering in August. The flowers are somewhat after the fashion of the Petunia, and are curiously pencilled. There are now numerous varieties varying in the colour of their flowers from white to purple. All are of great beauty, and in beds and borders their brilliant flowers at once attract the eye; as pot-plants they are excellent, whilst the cut flowers are highly prized for vases and bouquets.



FIG. 64.—*SALPIGLOSSIS SINUATA*.

SCHIZANTHUS GRAHAMII RETUSUS (Fig. 65) is an elegant autumn-flowering annual, suitable for beds and borders; its deep rose-coloured flowers, tipped with crimson, are produced from

June to October. Grows 2ft. high.

S. pinnatus, 2ft. high, has rosy-purple and yellow flowers, spotted with purple or violet. It flowers from May to October, and is the hardier of the two species. They make excellent pot plants.

SCHIZOPETALON WALKERI is a pretty annual, bearing white flowers, which are delightfully fragrant in the morning and evening, or after a shower. It grows 1ft. high, and flowers from May to August.

SENECIO (JACOBÆA) ELEGANS (Double Groundsel) has long been a favourite bedding-plant, flowering in July and onwards till October; there are three or four varieties, with crimson, purple, and white flowers, also several dwarf varieties, growing only 9in. high; these produce a brilliant effect in beds and mixed borders.

FIG. 65.—*SCHIZANTHUS GRAHAMII RETUSUS*.

Stocks form a useful and very ornamental class of plants for flower-garden decoration, and are, or ought to be, grown in every garden. The varieties are now very numerous, and may be divided as follows: The Ten-weeks, Intermediate, and Biennial groups. The Ten-weeks Stocks should be sown in March or April in pans or boxes under glass, affording air when the plants are quite young, and watering carefully so as to prevent mildew from attacking them. The seedlings, when large enough to handle, should be pricked off into an old hotbed frame, or into boxes, keeping them as near the glass as possible to prevent drawing, and finally transplanting into the beds or borders during showery weather. The seed may also be sown in the open border about the end of April, in good soil, well dug and manured. Plants from this will flower when the earlier-sown batches have finished, keeping up a supply until late autumn.

There are several varieties, including the large-flowered dwarf Bedding Stock, growing 1ft. high, and forming a most



useful subject for general bedding; the plants are branching and of robust growth, whilst the flowers are large, of various colours, and are produced in great profusion. The Dwarf Bouquet Stock, 9in. high, forms a pretty, compact plant, smothered in flower, and is suitable for small beds and edgings. The Giant Globe Pyramidal Stock is 1½ ft. high, with long pyramidal flower-spikes covered with large globular flowers 2in. in diameter. It may be had in various colours, and is an effective plant in large beds and borders.

The Intermediate is a valuable section largely used by market growers. If sown in March or early in April in heat, it flowers in autumn and keeps on until cut down by frost. It may also be treated as a half-hardy biennial by sowing in July and August, wintering in a cold frame, and transplanting in early spring for May and June flowering. This group is also used largely for growing in pots. There are several subdivisions, such as the East Lothian, a branching Stock, 18in. high, with handsome trusses of flowers, in various colours, and the Covent Garden, a dwarfer kind, growing about 1ft. in height. The biennial group will be treated under "Biennials."

TAGETES SIGNATA, 1½ ft. high, is a profuse-blossoming branched Marigold, with yellow flowers. *T. signata pumila* is much dwarfer than the type, and more compact in habit; the form known as Golden Ring grows into a sturdy little bush, 1ft. high, and for bedding purposes is superior to the yellow Calceolaria, being literally smothered in golden-yellow flowers during summer and late autumn.

TROPÆOLUMS (Nasturtiums) are exceedingly showy plants, and very popular. *Tropaeolum canariense* (Canary Creeper) is a half-hardy annual, with bright yellow flowers and elegant foliage;

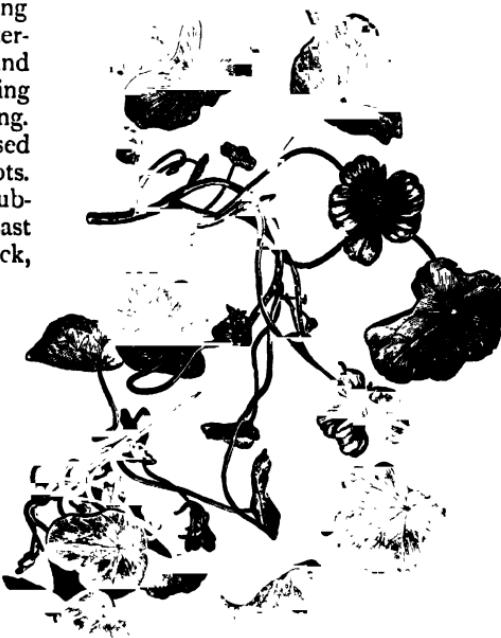


FIG. 66.—*TROPÆOLUM MAJUS*.

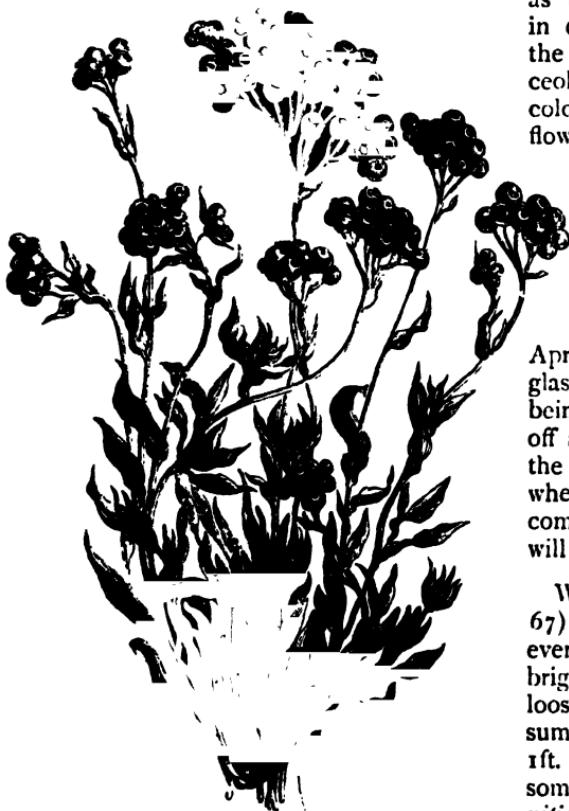
it is a climber, growing 6ft. high, and is very suitable for growing over arches, over the sides of flower-boxes, &c. It is also known as *T. peregrinum* and *T. aduncum*. *T. Lobbianum* is a superb climber, flowering more freely on a poor dry soil. There are several named varieties, differing only in the colour of their flowers ; all are graceful climbers, bearing a great profusion of blossom, in rich and brilliant colours. They are suitable for covering arbours, rustic fences, trellis-work, &c. *T. majus* (Indian Cress) (Fig. 66) is the species from which the numerous forms of Tom Thumb Nasturtiums have originated. Few plants are so useful or rich in colour as these Nasturtiums, for in dry soils they surpass the Geranium and Calceolaria in brilliancy of colour and profusion of flower.

Seeds may be had either in named varieties or in mixed colours. All the annual Tropæolums may be easily raised from seed sown in the open ground in April, or in pots under glass, the young plants being gradually hardened off and planted out about the beginning of June, when they will soon commence to flower and will keep on until October.

WAITZIA AUREA (Fig. 67) is a very showy everlasting, producing its bright yellow flowers in loose corymbs during the summer. It grows about 1ft. in height, and is sometimes called *Morna nitida*.

FIG. 67.—**WAITZIA AUREA.**

flowering annuals, producing richly-coloured flowers in great profusion ; for filling flower-beds and borders, and for cutting, few flowers are more useful. The seed should be sown in a gentle hotbed in March or April, pricking out the seedlings into frames,



ingly handsome autumn-flowering annuals, producing richly-coloured flowers in great profusion ; for filling flower-beds and borders, and for cutting, few flowers are more useful. The seed should be sown in a gentle hotbed in March or April, pricking out the seedlings into frames,

and finally transferring to their flowering quarters in June. They like a deep rich soil and a sunny position. *Zinnia elegans* is the one from which most of our garden forms have originated. The typical plant grows 2ft. high, and produces its scarlet flowers in July. There are now numerous double and single forms in various shades of colour, all of which are well worth growing. The Zebrinas, or striped Zinnias, grow from 1ft. to 1½ft. high; they have beautifully-striped double flowers, and about half of them come true from seed.

Biennials.

These are plants very closely allied to annuals, the distinction lying in the fact that they do not flower the same year as sown, but must have two years to come to maturity, whilst annuals, both hardy and half-hardy, may be had in flower the same year. Biennials are grown from seed one year, and flower, fruit, and die the next; or if they do manage to live over the second year they are of little use afterwards. From June till August is the usual time to sow—the earlier the better, as they then stand a good chance of making nice plants before winter sets in. For sowing, a border should be chosen, with an aspect other than a south one, so that the seedlings do not receive the full rays of the scorching summer sun; the soil should be moderately rich, deeply dug, and free from weeds. The seeds are best sown in drills, as the hoe can then be used for keeping down weeds, and also for keeping the surface open—a point which is often greatly overlooked in the cultivation of plants of all kinds. After sowing, a good watering should be given them—through a fine rose, so as not to disturb the seeds—and a thin shading of tiffany or other light material should be thrown over, to keep the soil from drying up too quickly; great care, however, must be taken to remove this as soon as the seedlings break through the soil. When large enough, they should be transplanted into rows a few inches apart; this must be done before they get overcrowded in the seed-bed, and they will then make strong sturdy plants, and will lift with good balls of soil when removed to their permanent quarters.

The time for permanent planting varies from the end of September to March, some preferring to plant in the autumn, because then the weather is usually much milder than in early spring, and if carefully planted they get a good hold of the new soil before winter sets in. On the other hand, those who wait until spring before planting, have this advantage, viz., that the

plants are all kept together, and if a spell of exceptionally hard weather is experienced, they may be much more easily protected by having some dry leaves or other light material thrown lightly amongst them, than if scattered about the beds and borders.

With regard to the after-treatment of biennials—uses, &c.—the remarks under the head of “Annuals” may be taken as applying equally to biennials, and will therefore not be repeated here. A large number of hardy annuals are very often treated as “biennials” by being sown in the autumn of one year for flowering the following spring, and seeing that these have been described under the head of “Hardy Annuals,” only those plants

of strictly biennial duration—and they are far from numerous—are left for description here.

ANCHUSA CAPENSIS (Cape Forget-me-Not) has intense blue flowers; it is a half-hardy biennial, requiring greenhouse protection in winter. It grows from 12in. to 18in. high, and flowers in June.

BETA is a genus containing several ornamental-foliaged biennials which are invaluable for summer-bedding. *Beta Cicla variegata* (Chilian Beet) has very handsome variegated leaves, and forms an effective plant in sub-tropical bedding. Dell's Crimson-leaved Beet grows from 6in. to 12in. high, and is beautiful as an edging or in the mixed flower-border. It has crimson leaves.

CAMPANULA MEDIUM (Canterbury Bell) (Fig. 68) is a handsome decorative border plant, especially when grown as a single specimen. It grows 3ft. or 4ft. high, and in July produces an abundance of flowers in shades of colour varying from white to purple. The single forms are popularly known as Cup-and-Saucer Canterbury Bells, whilst the double ones are known as the Hose-within-Hose Campanulas.



FIG. 68.—CAMPANULA MEDIUM.

in June and July. It has bright yellow flowers marked with two rusty spots at the bottom of the corolla on the inner side.

CELSIA CRETICA is a popular biennial, growing 3ft. or 4ft. high, and flowering

CHAMÆPEUCE DIACANTHA and **C. CASABONÆ** (Fish-bone Thistle) are ornamental Thistle-like plants, with handsome spiny foliage; they are used in sub-tropical and carpet-bedding arrangements, being grown expressly for the sake of their ornamental foliage. These plants are usually treated as half-hardy annuals.

GLAUCIUM LUTEUM (Horned Poppy) has ornamental glaucous-grey foliage and showy scarlet or yellow flowers. It makes a fine plant for borders and for the wild garden, and delights in a poor sandy soil. It flowers in August.

HEDYSARUM CORONARIUM (French Honeysuckle) is usually treated as a biennial. It has crimson and white flowers, which are produced in June. It forms a showy plant for shrubberies, wild gardens, &c., growing to a height of 2ft., and bearing dense spikes of blossom.

HUMEA ELEGANS is a half-hardy biennial, suitable for sub-tropical gardening. It has graceful, feathery panicles of brownish-red flowers, and powerfully-scented foliage. It grows from 4ft. to 6ft. high, and flowers from July to October. A white variety is also in cultivation. The seed should be sown in July or August, and the plants kept in a frame or cool house throughout the winter, during which period they must be very carefully watered or they will lose all their bottom leaves. They should not be planted out before June, as they are tender subjects, and being tall-growing, they need to be staked to protect them from rough winds.

HONESTY (*Lunaria annua*) (Fig. 69) is a handsome spring-flowering border plant, thriving in almost any soil. The type has purple flowers, but there are two or three varieties, one having white flowers. It grows from 1½ft. to 2ft. high, and flowers from May to July. The pods, which are elliptic in shape, but blunt at the ends, are very ornamental for winter decoration when stripped of their outer coverings. Synonymous with *L. biennis*.

LAVATERA ARBOREA VARIEGATA is a strikingly handsome foliage plant, with leaves beautifully variegated; it grows from 4ft. to 6ft. high, and makes a noble specimen plant for lawns or for sub-tropical bedding. It has large pale purple flowers, 2in across, which are produced during August and late autumn.



FIG. 69.—*LUNARIA ANNUA*.

MECONOPSIS.—*M. nepalensis* is a grand plant, 4ft. high, with handsome foliage and large golden-yellow saucer-shaped flowers, 2in. to 3in. across, produced in abundance in June and July on the tall flower-stem. It thrives best in a cool, moist, shady situation, planted in rough, peaty soil. *M. Wallichi* (Blue Himalayan Poppy) is a handsome biennial, 4ft. to 6ft. high, producing its pale blue flowers in June.

PAPAVER NUDICAULE (Iceland Poppy) is usually grown as a biennial, being sown in late summer for flowering the following season. It grows from 12in. to 18in. high, and produces flowers in very delicate shades of white, yellow, orange, and scarlet. It is an admirable subject for rockwork or the front of borders, the cut flowers being also highly prized.



FIG. 70.—DIANTHUS
BARBATUS.

of Wight. It is known as the Wallflower-leaved Stock.

SWEET WILLIAM (*Dianthus barbatus*) (Fig. 70) is usually treated as a biennial, and, when well grown, forms an excellent border plant. It attains a height of 18in., and about July produces a mass of flowers of various colours. The Auricula-eyed have crimson

Stocks, grown as biennials, are generally the "Bromptons" and the "Queens." The seed should be sown in July for flowering the following May or June; the seedlings should be wintered on a dry border, or preferably in a cold frame or greenhouse, and transplanted into their flowering quarters about March or early April. The Giant Brompton is remarkable for its robust growth and immense spikes of large double flowers, in various shades of white, scarlet, and purple. It grows to a height of 2ft. The Queen Stock is very like the Brompton, but as a rule the underside of the leaf is rough and woolly, whilst that of the Brompton is smooth on both sides. It grows 1½ ft. high, and, like the Brompton, produces flowers in shades of white, scarlet, and purple. Both the Brompton and Queen Stocks have originated from the same species—*Mathiola incana*, a species with purplish flowers which grows wild on the cliffs in the Isle

flowers with white eyes. The seed may be sown in May, and the young plants transferred to their permanent quarters in September or October for flowering the following season.

VERBASCUMS are grand plants for shrubberies, or for growing in back positions in large flower borders where they show off to advantage. *V. olympicum* is one of the best, with large silvery leaves and tall branched flower-spikes, 6ft. in height; these are covered with numerous rich yellow flowers, 1in. across. Flowers from May to August. *V. phlomoides* grows 5ft. high. It has massive green foliage and bright yellow flowers, which are produced successively from May to August, as in the last-mentioned species.

WALLFLOWERS (*Cheiranthus Cheiri*) are exceedingly showy and effective sweet-scented border plants; no garden, however small, should be without a clump of these old-fashioned and decidedly popular plants. The seed should be sown in April and May—the earlier the better—

for flowering the following spring.

There are numerous varieties in cultivation, some with double (Fig. 71) and others with single flowers. Harbinger, 1½ft. high, has very large single flowers, varying from brown to orange-red. Primrose Dame has sulphur-yellow flowers. Golden Tom Thumb is very fine, producing an abundance of rich orange-yellow flowers. It is also a single and grows about 1ft. high. Ruby Gem is from

12in. to 15in. high, with extra large single flowers of a ruby-violet colour. The double-flowered German Wallflowers produce massive spikes of large, sweet-scented flowers, which are remarkable for the variety of their colours, and are highly appreciated for the embellishment of flower-beds and borders.



FIG. 71.—CHEIRANTHUS CHEIRI.

The following are additional species and varieties in these two sections:

Hardy Annuals.

Adonis

AUTUMNALIS, fl. blood-red, with dark centre; 1 ft.; May.

Argemone

GRANDIFLORA, handsome glaucous l.; fl. snowy-white, with golden centres; 2 ft.; July. *HUNNEMANNII*, golden-yel.; 2 ft.

Asperula

AZUREA SETOSA, light blue heads of sweet-scented fl.; 1 ft.; June to August.

Athanasia

ANNUA, yel. everlasting fl.; 1 ft.; July.

Calandrinia

GRANDIFLORA, greyish l., rose-coloured fl. with golden anthers; 1 ft.; July and August. *NITIDA*, fl. rose-coloured; 6 in.

Centaurea

AMERICANA, rosy-lilac fl.; 1½ ft.; August. *CYANUS CYANOIDES*, rich blue, 6 in. *MOSCHATA*, fl.-heads purple; 2 ft.

Chrysanthemum

CARINATUM ALBUM, fl. white, with inner ring of yel., and dark centre. *C. ATROCOCCINEUM*, deep sc. *C. AUREUM*, bright yel., with dark centre. *C. MORNING STAR*, fl. primrose-yel.; 2 ft. *C. PURPLE CROWN*, golden l., fl. purplish-cr., with inner ring of gold. *C. PURPLE QUEEN*, cr.-purple fl., with yel. ring; about 1½ ft.; middle of summer. *C. SCARLET PRINCE*, fl. velvety-sc., with a golden ring, semi-dbl.; 1 ft. *C. THE SHAH*, fl. purple-cr., with cr. ring and dark centre; 1½ ft. *C. W. E. GLADSTONE*, rich cr.; 1½ ft. *SIBTHORPII*, bright yel. fl.; 1½ ft.

Clarkia

ELEGANS PURPLE KING, dark car.; 2 ft. *E. SALMON QUEEN*, salmon shaded with white. *E. WHITE QUEEN*, pure white; 2 ft. *INTEGRIPETALA*, Mks. *LANGTRY*, rose, with broad white margin; 1 ft.; many varieties.

Coreopsis

BICOLOR ATROSANGUINEA, dark velvety maroon fl. *B. GRANDIFLORA*, golden fl., with sc. centre; 2 ft. *B. NANA*, yel. fl., with cr. centre; 1 ft. *B. NIGRA NANA*, velvety cr. *BURRIDGII*, fl. dark sc., edged yel.; 2 ft.; August.

Eschscholtzia

ALBA, creamy-white. *CALIFORNICA*, clear yel. Poppy-like fl.; 1 ft.; middle of summer. *CROCEA*, orange fl. *MANDARIN*, orange-sc. and gold. *TENUIFOLIA*, primrose-coloured; 6 in.

Gilia

DICHOTOMA, large fl. of purest white; 8 in. *INCONSPICUA*, fl. violet or purple; 9 in. to 12 in.; August. *LINIFOLIA*, fl. white, solitary; 1 ft. *MULTICAULIS*, fl. blue; 1 ft.

Godetia

GENERAL GORDON, deep rich cr., with light centre; 1 ft. *GLORIOSA*, deep blood-red. *MARCHIONESS OF SALISBURY*, glowing cr., with broad white margin. *WHITNEYI BRILLIANT*, rich glittering cr.; 1 ft.

Gypsophila

ELEGANS ALBA, white; 1½ ft. *FAS-TIGIATA*, fl. pale red; 1 ft.; July. *PERFOLIATA*, fl. pink; 1½ ft. to 3 ft.; July. *REPENS*, fl. white or pale rose; 6 in.; July to September. *STEVENII*, fl. white; 1 ft. to 2 ft.; July.

Helianthus

GOLDEN BOUQUET, numerous small golden fl.; 3 ft. *HUNGARIAN GIANT*, large flowered, 7 ft. to 8 ft. *MACROPHYLLUS*, dark green l.; yel. fl.; 6 ft. to 7 ft. *UNIFLORUS*, golden-yel. fl., with dark centre; 8 ft.

Malva

CRISPA, fl. white, pale purple at tip; 2 ft. to 5 ft.; June. *MAURITIANA*, fl. deep purple; 4 ft. to 6 ft.; June. *ZEBRINA ATRO-RUBENS*, rose-coloured, veined with dark cr.; 3 ft.; July.

Mignonette

GARAWAY'S WHITE, fl. white, in long racemes; *GOLDEN QUEEN*, fine

**Hardy Annuals.—Mignonette
(contd.)**

heads of fl.; 1ft. **MACHET**, dwarf and compact; large fl.-heads of rich colour; 9in. **MILES' SPIRAL**, fine light-coloured heads; 1ft. **PARSON'S WHITE**, pure white heads; 1ft. **VICTORIA CRIMSON**, large heads of fine colour, deep red fl., compact; 6in.

Omphalodes

LINIFOLIA, greyish l.; pure white fl.; 6in.; June to August.

Salvia

BLUE BEARD, fl. in bluish-purple heads, useful for cutting; 1ft.; July

and August. **HISPANICA**, blue fl.; 1ft. to 2ft.; June. **HORMINUM**, fl. purple; 1½ft.; June.

Saponaria

CALABRICA, fl. rose; 6in. to 12in.; August. **C. ALBA**, fl. white; 6in. **SCARLET QUEEN**, deep rosy-car. 6in. **VACCARIA**, fl. red; 1ft. to 2ft.; July.

Scabiosa

BLACK KING, dark cr.; 2ft. **GOLDEN KING**, orange fl. **SNOWBALL**, pure white dbl. fl.; 2ft. **VELVETY BLOOD-RED**, 1½ft.

Half-hardy Annuals.

Abronia

ARENARIA MACROPHYLLA, Verbena-like heads of sweet-scented yel. fl.; trailing; July and August. **UMBELLATA**, rosy-pink fl., sweet-scented. **U. GRANDIFLORA**, deep rose-lilac fl.

Alonsoa

ALBIFLORA, fl. pure white, with yel. eye; 1½ft. to 2ft. **CAULIATA**, fl. sc.; 1ft.; June. **LINIFOLIA GRACILIS**, graceful l.; orange-sc. fl.; 1½ft.

• **Amarantus**

BICOLOR RUBER, l. cr.-sc. striped with green; 1ft. **HENDERI**, fl. rosycar.; 3ft. **MELANCHOLICUS SUPER-BUS**, l. elliptic, blood-red above, cr. beneath. **SALICIFOLIUS**, long graceful l. of bright orange-red; 3ft. s. **PRINCESS OF WALES**, l. car., orange-green, and bright yel.; 3ft. **SANGUINEUS**, fl. purple; l. blood-red; July.

Anagallis

LILACINA, lilac; 1ft.; May. **LINIFOLIA CERULEA**, intense blue; 6in. **L. EUGENIE**, blue fl., margined white. **PARKSII**, red fl.

Arctotis

CALENDULACEA, orange - coloured Daisy-like fl.; 6in.; July and August. **C. SULPHUREA**, fl. sulphur - yel. **GRANDIS**, fl. white, with yel. central ring, and light blue disk, with pale lilac reverse; 2ft.

Aster (China)

GOLD-QUILLED YELLOW KING, intense yel. fl., full and beautifully quilled. **JEWEL**, globular fl. with incurved petals, of various colours; 1½ft. **LADY-IN-WHITE**, beautiful white fl., with overlapping petals; 15in. **MINIATURE BOUQUET**, good for edgings, &c.; numerous small well-formed fl. of various colours; 9in. **OSTRICH FEATHER**, of branching habit; large snowy-white fl., with curled and twisted petals; 1ft. **RAY**, white and rose fl., having long thread-like quilled petals; 1½ft. **TRIUMPH**, deep red, striped white; of compact habit; Paeony-like fl.; 1ft.; also a white variety.

Aster

SINENSIS, beautiful single Aster, forming branching bushes; fl. 3in. across, of a delicate lilac, with yel. centre; 15in.

Aubergine

Handsome in fruit; white, sc., purple, &c.; 1½ft.

Bidens

ATROSANGUINEA, composite plant; cr. fl. **FERULAEFOLIA**, fl. yel.; 2ft. **GRANDIFLORA**, beautiful yel. fl.; 1½ft. **STRIATA**, ray florets white, disk yel.; 2ft. to 3ft.

Capsicum

Ornamental plants, bearing showy, handsome fruits, of various colours; 1½ft.

Half-hardy Annuals (contd.)— Cuphea

CYANEA, fl. yel. and red; July. *JORULLENSIS*, fl. red; 2ft. *LANCEOLATA*, fl. bluish; 1½ ft.; July. *L. ALBA*, white; free-flowering. *MINIATA*, l. covered with white bristles; fl. sc.; 1ft.; June to September. *PINETORUM*, fl. cr. or deep purple; 1½ ft.; July.

Impatiens

AMPHORATA, fl. pale purple, speckled with rose-red; August. *CANDIDA*, fl. white; 6in. *HYBRIDA NANA*, fl. pale rose to cr.; 1ft. *ROYLEI*, branching heads of fl., white to purple; 5ft. to 6ft.; August. *SULTANI*, very free-flowering, sc.; 1½ ft.; June to September.

Marigold

AFRICAN QUILLED, 1ft. *AUREA FLORIBUNDA*, golden-yel.; 9in. *LEGION OF HONOUR*, large single fl., golden-yel. with dark cr. blotches; 9in.

Nicotiana

ACUTIFLORA, fl. pure white; 1ft. to 2ft. *COLOSSA*, large deep green l.; 5ft. *GIGANTEA PURPUREA*, purple fl.; 4ft. *SUAVEOLENS*, white fl., sweetly scented morning and evening; 2ft.; July and August.

Palava

FLEXUOSA, rosy-pink Mallow-like fl.; 1ft.; June. *RHOMBIFOLIA*, fl. rose-coloured.

Perilla

ATROPURPUREA LACINIATA, deep brown laciniated l.; useful for summer bedding. *OCYMOIDES*, fl. white; July

Phlox

DRUMMONDI DEFiance, cinnabar-red; 6in. *D. SNOWBALL*, pure white; 6in. *D. TRIUMPH*, compact, brilliant sc.; 1ft.

Rhodanthe

MACULATA, rosy-purple with cr. circle; 1½ ft. *M. ALBA*, silvery-white fl.

Ricinus

BORBONENSIS ARBOREUS, large bronzy-green l.; 5ft. *CAMBODGENESIS*, l. purple; 5ft. *CINERASCENS*, brown-purple l., changing to dark green. *GIBSONI ATROSANGUINEUS*, l. cr.; 5ft. *MACROCARPUS*, silvery-bronze stems.

Salpiglossis

BEAUTY, fl. cr.-brown, marked with orange. *DWARF MIXED*, various colours; 1½ ft. *PRINCESS IDA*, fl. creamy-white, marked with gold. *THE MOOR*, rich copper-coloured fl. *VIOLET QUEEN*, violet, marked with purple; 2ft.

Salvia

COCCINEA, fl. sc.; 1½ ft.; July. *PATENS*, rich deep blue; 2ft.

Schizanthus

CANDIDUS, fl. white; 2ft.; July. *GRANDIFLORUS ALBUS*, fl. white with yel. eye; 1½ ft. *PAPILIONACEUS*, spotted purple and yel., shading to cr.; 1½ ft. *PYRAMIDALIS COMPACTA*, violet-purple, spotted with black; 1½ ft. *RETUSUS ALBUS*, fl. white and yel.

Torenia

CORDIFOLIA, fl. pale blue, 4in. to 8in.; July. *FLAVA*, fl. yel., with purple eye; 6in. to 10in. *FOURNIERI GRANDIFLORA*, fl. sky-blue, spotted with indigo and yel.; 9in. *F. WHITE SWAN*, large white fl. *F. WHITE WINGS*, white, flushed with rose.

Tropaeolum

LOBBIANUM BRILLIANT, bright sc., with cr. throat. *L. CARDINAL*, small dark sc. fl. *L. SPITFIRE*, bright fiery red; graceful climbers. *TOM THUMB EMPRESS OF INDIA*, brilliant cr., with rich velvety gloss; dark green l.; 9in. *T. T. LADYBIRD*, rich golden-yel. edged with ruby; 1ft. *T. T. TERRA COTTA*, very showy; fl. of a coppery-buff; 1ft.; July to September.

Zinnia

GRANDIFLORA, fl. very large, with broad petals, of various colours; 1½ ft. *HAAGEANA*, single golden fl., striped with orange; 1ft.; July and August. *H. FLORE PLENO*, dbl.-flowered form; 1ft. *H. PUMILA FLORE PLENO*, fl. golden-striped orange; 6in. *MINIATURE POMPONE*, various brilliant colours; 6in.

Biennials.**Beet (Beta)**

BRAZILIAN, large handsome l., suitable for sub-tropical gardening; 2½ ft. DRACÆNA - LEAVED, with recurved cr. l. THE SHAH, very dark cr. l.

Bromus

BRIZÆFORMIS, ornamental grass, suitable for bouquets; 1ft.

Carduus

MARIANUS, green and white variegated l.; 3ft. TAURICUS (*Onopordon tauricum*), fine ornamental Thistle, having large woolly silvery l. and golden fl.; 6ft.

Leptosyne

GIGANTEA, of quick growth, yel. Sunflower-shaped fl.; 4ft. to 6ft.

Michauxia

CAMPANULOIDES, branching spikes of white fl. tinged with rose, somewhat resembling Passion-fl.; 3ft.; July and August. LÆVIGATA, fl. white; 9ft. or 10ft.; August.

Oenothera

BIENNIS. handsome yel. fl.; 4ft.; July and August. BIFRONS, fl. yel.;

1½ ft. GRANDIFLORA, yel. fl.; 2ft. ODORATA, fl. at first yel., turning reddish as they fade; 1ft. to 2ft.; April and May. TARAXACIFOLIA, fl. white.

Papaver

ALPINUM, fl. white, yel., rose, &c., useful for rockwork; 6in.; middle of summer. GARIEPINUM, numerous light sc. fl.; 3ft. NUDICAULE ALBUM, white fl.; 1ft. N. MINIATUM, orange-red; 1ft.

Trachelium

CŒRULEUM, sky-blue fl.; 2ft.; August. C. ALBUM, white fl.

Verbascum

BLATTARIA, stem varying from 8in. to 4ft. high; fl. bright yel. CHAIXII, dark green l.; bright yel. fl., lilac stamens; 4ft. LIBANI, large yel. fl.; 5ft. PANNOSUM, large grey l.; fl. yel.; 6ft.

Wallflowers

BEDFONT GIANT, fl. yel.; l. dark green; 1ft. GOLDEN KING, early, golden-yel.; 1½ ft. OLD GOLD, fl. clear yel., with dark cr. calyx; 1ft. to 1½ ft. SCARLET QUEEN; 1½ ft.

CHAPTER IV.

HARDY HERBACEOUS PERENNIALS.

Limitation—Uses—Situation—Planting—Colour-Harmonies — Propagation—Selected List of Species and Varieties.

UNDER the above heading are grouped plants having soft and succulent stems, which die down to the ground each year; whilst the roots live for more than two years, are able to endure our English winters in the open border, and send up new stems each spring. It will thus be seen that they are quite distinct from other hardy plants grown in our gardens, from trees and shrubs on account of the soft and succulent (not woody) nature of their stems, and from annuals and biennials because of their more or less indefinite period of existence.

At the present day the number of hardy herbaceous perennials suitable for growing in our gardens is endless, as a cursory glance through the catalogues of nurserymen making a speciality of these plants will show. A large proportion of plants so catalogued are of interest to the botanist only, but, at the same time, quite numbers are of service to the gardener, and indispensable for the embellishment of the flower garden throughout the greater part of the year. Hardy herbaceous perennials are a very popular set of plants. Many of them are old-fashioned, having been grown in our gardens for a great number of years, whilst others are comparatively new, and have soon become universal favourites.

USES—The first and most important use to which perennials are put is undoubtedly the embellishment of the mixed flower-

border, of which they may be said to form the backbone, for at the present time, in gardens both large and small, are to be found borders set apart chiefly for the cultivation of this class of plants, supplemented by a free use of annuals and biennials. Then again, the tall and vigorous-growing perennials are extremely useful for the decoration of shrubberies, wild gardens, &c., in which positions they prove quite attractive, and at the same time do not require much attention. There is yet another way in which these plants may be profitably utilised, and that is in providing a supply of cut-flowers suitable for table decoration, bouquets, &c., and at a time when there is a dearth of flowers adapted for cutting under glass, viz., during the early autumn.

CULTIVATION.—The majority of hardy herbaceous perennials thrive well in any ordinary garden soil, though a rather heavy loam, made moderately rich by the application of manure, is best suited for their culture, especially for those of tall and vigorous growth.

If the situation is too wet, draining must be resorted to; and if the soil is too tenacious and heavy, it must be either dug out and replaced by a more suitable compost, or made lighter in texture by adding a quantity of leaf-mould, &c. If, on the other hand, it is naturally too light and sandy, it is advisable to apply a dressing of heavy loam, incorporating it well with the original soil. In preparing a new border for the reception of these plants, it is imperative that it should be trenched to a depth of 2ft. the autumn previous to planting, and at the same time manure, if required, should be added, so as to admit of its being thoroughly mixed with the soil. If these operations are carried out in the autumn, the border will be in fine condition for planting the following spring, as the soil will then have had time to consolidate.

The operation of planting is one that requires an intimate knowledge of the subjects being dealt with, especially with regard to their height, colour, and flowering period, so as to find suitable positions for them, the object being to dispose of them so that the whole border may be equally interesting at all seasons of the year. It would be a mistake to have all the early-flowering subjects at one end of the border, and all the late ones at the other; or to have all the plants with red flowers at one end and all those with white ones at the other. The spring-flowering subjects should occupy positions throughout the entire border, and so should the summer- and autumn-

flowering plants. In the same way each colour should be spread throughout the border in such a way that perfect harmony prevails. Of course, if half-a-dozen plants of one kind are to be employed, by all means plant them together in a group, or in two groups, as this is much more satisfactory than dotting them about singly all over the border. Generally the position of the flower-border is against the side of a house or wall of some kind, and when this is the case, it is an invariable rule to plant the tall, vigorous-growing subjects towards the back, reserving the front positions for the dwarf and weakly sorts. If, however, the border is of a good width, this plan ought not be adhered to too strictly. Here and there the tall plants might be allowed to come towards the front, so as to break the formality which otherwise would be evident.

This naturally leads us to the question, "When is the best time to plant?" And this may be answered by saying that, providing the weather is favourable, hardy herbaceous perennials may be planted any time between ripening their summer growth and commencing to grow again in the spring, though weakly-growing subjects are best left until the last-mentioned period. When once planted, perennials are often allowed to remain undisturbed for years, receiving no other treatment than being dug amongst annually, chopping off portions from the outside of clumps that have become too large, and giving an occasional dressing of manure. More satisfactory results could be obtained in the majority of cases by lifting the plants bodily every second or third year, trenching and manuring the border previous to replanting. The strong, vigorous growers should then be divided, and smaller portions replanted. When the strong growers burst into growth in the spring, they generally produce far more shoots than are required, and it is an excellent plan to thin these out, leaving only a moderate proportion. They will well repay for this judicious thinning by a prolonged period of flowering and also by producing flowers of better quality.

Staking and training are operations that require to be seen to in good time, and, in performing these, the peculiarities of the individual plants must not be interfered with, all tight lumping must be avoided, and the stakes must be placed so as to be hidden as much as possible by the foliage. Cleanliness must always be aimed at, for nothing detracts more from the general beauty of the border than weeds. These must have no quarter, and, at the same time, flowers and foliage that are decayed and

no longer serve any useful purpose, must be removed. If alpines are grown in the mixed border, they must be planted at the front, and care must be taken that they are not overrun by stronger growers. It is a good plan to place a few stones round them, so as to keep the collar of the plant from off the soil; otherwise, in mild, wet winters they are apt to damp off.

When a large number of cut-flowers are required, it is best to grow plants, especially for furnishing these, in the reserve garden.

PROPAGATION.—*By Division.*—This is a method which consists in dividing up the old root-stock into two or more portions, each of which is furnished with roots and forms a separate plant. Many of the strong-growing kinds lend themselves admirably to this method of increase. In fact, division of the crowns often has to be resorted to in order to keep them within bounds—with Michaelmas Daisies, to quote a familiar example. In dividing the root-stock, it is always best, where practicable, to break or pull it asunder, rather than to chop it with the spade, a process which is responsible for the loss of many valuable roots. Of course, this only applies to the moderate growers; the stronger ones do not mind the loss of a few roots.

By Seeds.—Seeds may be sown at any time of the year under glass, and in the open from March to September. The best time to sow outside is during April or May, as then the seedlings have time to form strong plants before winter sets in. The seeds should be sown in beds in the reserve garden, and when large enough, the seedlings should be planted in nursery rows, in good soil and sheltered situations, in the reserve garden, and kept growing on until of a size suitable for transferring to the open border.

By Cuttings.—This is an easy way of working up a stock of many kinds, and is often resorted to when other methods fail or are carried on with difficulty. It has one great advantage, and that is the plants so obtained are bound to be true to name, and such is not always the case when they are raised from seed. Cuttings of the young shoots taken off in spring and inserted in pots or pans of light sandy soil, will root readily if they are placed in close frames and kept shaded from strong sunlight; while if a little bottom-heat is available, that will prove an advantage and materially assist the cuttings in the formation of roots. After rooting, the cuttings must be gradually inured to light and air, and kept

growing freely all the summer. If flowers appear they must be pinched out in the bud state, so that the whole energy of the plant may be directed towards making a good strong specimen, able to withstand the winter.

In the following list many of the popular florists' flowers, as well as bulbs and tubers, have been intentionally omitted, as these have been separately treated.

ACHILLEA PTARMICA FLORE-PLENO (Double Sneezewort) is a useful border plant, growing 2ft. high, and producing an abundance of double white flowers in corymbs; these may be had from July to September. Propagation by seeds, cuttings, or division.

ACONITUM NAPELLUS (Common Monk's Hood) is a tall Larkspur-like plant, growing from 3ft. to 4ft. high, and bearing numerous blue helmet-shaped flowers on large terminal racemes. It is of easy culture, and forms a very effective border plant, suitable also for shrubberies, wild gardens, &c.; it must, however, be planted

where there is no fear of cattle getting at the roots, which are extremely poisonous, and although quite distinct, have sometimes been mistaken for Horse-radish, with fatal results. The variety *album* has white flowers, and *bicolor* blue and white. Both varieties, as well as the type, flower from June to September. Propagated by seeds or division.

AGROSTEMMA CORONARIA.—
A synonym of *Lychnis coronaria*.

ANEMONE (Windflower). A good many of the finest of herbaceous subjects are to be found in this genus, which is a very large one. The species may be had in flower from late spring to late autumn, and whether in the borders, on the rockery, or in the wild garden,

FIG. 72.—*ANEMONE PALMATA*.

they are effective when properly displayed. In height they vary from a few inches in the case of *A. Pulsatilla* and *A. Hepatica*, to 3ft. in that of those popular favourites—*A. japonica* and its varieties. *A. alpina*, 18in., produces large white flowers, slightly tinted with a palish blue; while its variety *sulphurea* has large yellow flowers. *A. baikalensis*, 15in., is at present but little known, but it is very decorative with its snow-white flowers suffused with rose-pink,



produced in summer. *A. Fannini*, 3ft. to 5ft., is another new kind, with flowers 3in. in diameter, pure white, and fragrant. *A. Halleri*, 6in., has bright violet flowers, with a peculiar, hairy calyx. *A. palmata* is another small-growing kind, suited to the rockery; the flowers (Fig. 72) are yellow, or, in the case of the variety *alba*, white. *A. pennsylvanica* (*A. dichotoma*), 1ft., is another summer-flowering kind, much appreciated for its large white flowers. Of *A. japonica* (Japanese Anemone), there are several fine new forms now in commerce, the best being *alba*, *elegans*, *rubra*, Lady Ardilaun, Lord Ardilaun, Collerette, Silver Cup, and Vase d'Argent.

Other desirable species and varieties are *A. sylvestris*, 1ft., pure white; *A. narcissiflora*, 9in., pure white; *A. rivularis*, white, 2ft.; *A. trifolia*, and *A. vernalis*, 3in., both white. Taken generally, these herbaceous kinds are shade- rather than sun-lovers. They may be propagated by division in late autumn or in spring (March).

AQUILEGIA (Columbine) is a genus of free-flowering subjects of easy culture in ordinary garden soil. They are suitable for beds, borders, shrubberies, &c., and thrive in shady situations. They are also very beautiful when naturalised in grass; and the flowers are also prized for cutting. Aquilegias are propagated by seeds or by division, the latter method being the only safe way to perpetuate any distinct variety, as they do not reproduce themselves entirely true from seeds. A sowing of seeds will, however, yield a fair proportion true to name, or at any rate of good colour and habit, and the inferior ones may be pulled up and thrown away. *A. aculeata* (Rocky Mountain Columbine) is one of the best; it grows from 1½ft. to 2ft. high, and bears large sky-blue flowers, with white cups and long spurs, from May to July. Numerous others are also grown, including *A. chrysanthia*, with bright golden-yellow flowers; *A. glandulosa*, with deep azure-blue flowers and white corollas; *A. pyrenaica*, with bright lilac or blue flowers, suitable for the rockery; and the beautiful hybrid, *A. Stuartii* (Fig. 73), purple, blue, and white.

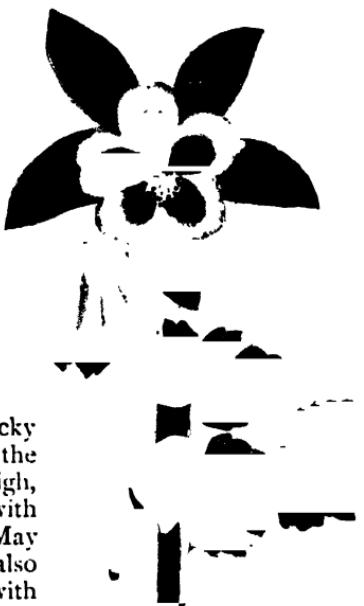


FIG. 73.—*AQUILEGIA STUARTII.*

ASTERS (Michaelmas Daisies) are handsome plants of easy culture, suitable for either borders, shrubberies, or wild gardens;

and, as the flowers are produced in great profusion in the late autumn, when few hardy plants are in flower, they are very much prized for cutting. The species and varieties are very numerous, and are propagated by either seeds, cuttings, or division. In dividing the plants (which is best done in the spring, although autumn may be selected), only the outside portions should be utilised. The old stools are best thrown away. *Aster acris* is an attractive plant, of neat, bushy habit, reaching a height of 2ft., and bearing an abundance of bright blue flowers during August and September. *A. Amellus* grows 2ft. high, and bears numerous violet-purple flowers in August and September. Its variety *bessarabicus* is one of the finest plants in the whole genus. It has purplish flowers, much larger than those of the type. *A. diffusus horizontalis* is of curious habit, growing 2ft. high. It is an exceedingly effective border plant, its numerous branching stems being literally smothered with small white flowers edged with red. It flowers during September and October. *A. ericoides* has long graceful sprays of small white flowers. *A. grandiflorus* (2ft. to 2½ ft. high) bears an abundance of large violet or blue flowers during September and October. *A. Novae-Angliae* bears purple flowers with orange centres, in terminal clusters, on stems varying from 3ft. to 5ft. high. Two or three varieties are also grown. *A. Novae-Belgii* grows 3ft. or 4ft. high, and produces its pale blue flowers in the late autumn. Numerous garden varieties are in cultivation, differing from the type chiefly in the colour of their flowers. *A. undulatus* grows 3ft. high, and produces an abundance of soft lilac-coloured flowers. *A. vimineus* (3ft.), small white, star-shaped flowers, in graceful sprays. See also additional kinds at end of Chapter.

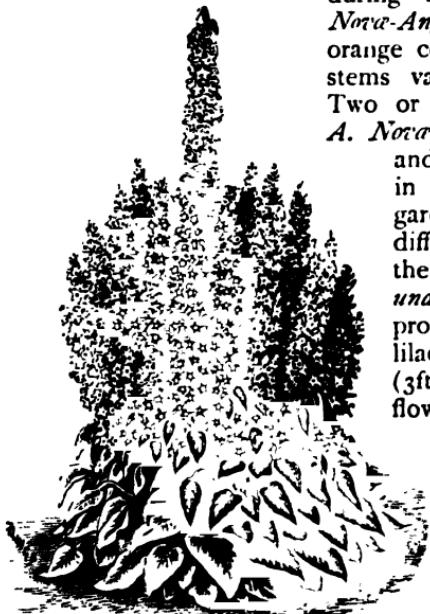


FIG. 74.—*CAMPANULA PYRAMIDALIS*.

flowers during July and August. For shrubberies, beds, or back positions in the mixed border, it is well suited; but it is especially adapted for the wild garden, as it "runs" considerably. Increased by division or cuttings taken off with a heel in spring.

BOCCONIA CORDATA (*Plume Poppy*) is a handsome foliage plant, having large roundish leaves, which are deeply lobed. It grows from 5ft. to 7ft. high, and bears terminal panicles of creamy - white

CAMPANULAS are handsome subjects, with bell-shaped flowers. The tall-growing kinds will be found invaluable for large borders. Propagation by seeds, cuttings, or division. *Campanula persicifolia* and its variety *maxima* have blue flowers. A white variety (*alba grandiflora*) is exceedingly beautiful, being pure white and of very large size. These plants attain a height of 2ft. or more, and flower from June to August. *C. pyramidalis* (Chimney Bell-flower) (Fig. 74) is a noble plant, forming a bushy pyramid, composed of numerous stems, 4ft. or 5ft. high. These, during June and July, are crowded with large blue salver-shaped flowers. Its white variety (*alba*) is similar in habit, differing only in the colour of its flowers. The species and its variety are splendid plants, either for the border or for pot-culture. Numerous others are also grown. An excellent plant is *C. glomerata* (Fig. 75). It grows some 2ft. high, and varies from bluish-violet to white. Then there are *C. alliariæfolia*, 3ft., white; *C. latifolia Burghalti*, 2ft., bluish-purple; and *C. Tracheatum flore-pleno*, 2ft., blue, double.

CENTAUREAS are useful border plants, of easy culture in ordinary garden soil. They are increased by either seeds or cuttings. *C. dealbata* grows 1½ ft. high, and bears rose-coloured flowers from July to September. *C. glastifolia* produces pale yellow flowers from June to September, on stems 3ft. to 4ft. high. *C. macrocephala* is a useful plant for the back of the herbaceous border. It grows from 3ft. to 4ft. high, and bears large heads of yellow Thistle-like flowers during July and August. *C. montana* is an early summer-flowering species, growing 2ft. high, and producing large bright blue flowers; the varieties *alba* and *rosea* differ only in the colour of their flowers. *C. pulchra* grows 1ft. high, and bears purple flowers during August; its variety *major* has bright rosy-purple flowers and beautifully cut silvery-grey foliage. *C. ruthenica* grows about 3ft. high; it has graceful foliage, and bears pale yellow flowers in July.

CHELONE BARBATA.—See *Pentstemon barbatus*.

CHRYSANTHEMUMS are useful border plants, the cut flowers being also much appreciated for decorative purposes. They are readily increased by either seeds, cuttings, suckers, or root



FIG. 75.—CAMPANULA GLOMERATA.

division. *Chrysanthemum maximum* grows 2½ ft. high, and forms a large bush, which, from June to September, is covered with white flowers of great size and substance. Even better than the type are the forms Munstead, Duchess of Abercorn, Fimbriatum, Maurice Prichard, and Miss Head. *C. uliginosum* (syn. *Pyrethrum uliginosum*) grows 5 ft. high, and is a valuable plant for autumn decoration, either in back positions in the herbaceous border, in shrubberies, or in beds in semi-wild parts of the pleasure-ground. It has large Daisy-like flowers, pure white, with yellow centres, from 2 in. to 3 in. across, and produced during September and October.

Though the early-flowering Chrysanthemums have not made the advance in public favour that they should have done, considering their great utility alike for garden decoration and for furnishing cut flowers for home use or for market, there is strong evidence that their merits are beginning to be more fully recognised, and that their culture is extending in all directions.

In forming a collection of these early-flowering Border Chrysanthemums, it is always advisable to grow two lots of plants of the same varieties: one in pots, and another outside in a nice sunny position. The former will be extremely useful for room or conservatory decoration, and should any of the plants outside prove tender and unable to withstand the rigour of winter, or fail to throw up cuttings for propagating, their stock may be grown from the pot plants, and the risk of losing choice varieties is reduced to a minimum. Unless duplicates are thus grown, it is practically certain that losses will occur amongst the outside plants, and usually most highly-prized varieties are those to disappear.

With all early-flowering varieties the end of February or beginning of March will be quite soon enough to put in cuttings. If inserted earlier they seldom make such good or such floriferous plants as those put in later, which grow on freely without a check. In taking cuttings, it is always best to choose those shoots springing from the soil, avoiding those which may have formed on the stem below where it was cut down; the latter never make such large or vigorous plants as those struck from suckers coming through the soil. In preparing the cuttings, carefully remove a few of the lower leaves, and then insert singly in small pots, properly drained, using a sandy compost of loam and leaf-mould, in equal proportions, thoroughly mixed. Press the soil firmly about the cutting, and immediately afterwards give a good watering, which tends to settle the soil, and to prevent the foliage from flagging. A close cold frame is a very suitable place to stand the pots in, keeping it quite close until the cuttings are rooted, and beginning to grow. Every care should be taken to see that the plants have sufficient water.

As soon as it is seen that the cuttings have taken root, air should be gradually admitted on all favourable occasions in order to keep the plants sturdy and strong. About the first week in April the plants may be shifted into larger pots (say large "sixties"). By the middle of May these pots will be full of roots, and the plants may be either transferred to the pots in which they are intended to flower, or they may be put out in a sunny place, where the soil has been deeply dug and well manured during the past winter. If potted, a compost of three parts fibrous loam and one part spent horse-droppings mixed together, with a little bone-meal added, will prove excellent.

Naturally, some varieties are much taller than others, and in the list appended, the average height of each is mentioned, indicating which sorts are best for back and front rows respectively. A fine effect may be produced by a judicious blending of colours; or the beds in large gardens may be planted with one variety only, thus giving a mass of one colour, as is done in many of the large public parks. The plants should be supported by neat stakes early, otherwise many will be broken by the wind, and thus cause unsightly blanks in the beds. If the soil is rich and deep, and the plants are strong and healthy, $2\frac{1}{2}$ ft. or 3 ft. between each will be a suitable distance; if the soil is poor or shallow, 1 ft. less space should be given. On all soils, however, it is advisable to make fresh plantations each year.

The following varieties have proved most meritorious in a large collection :

JAPANESE, OR LARGE-FLOWERED.—Alfred Droz, soft yellow; borne in profusion; height 2 ft. Albert Chausson, orange-red; very fine in pots or beds; height $2\frac{1}{2}$ ft. Baronne G. C. de Brailles; pale pink; very large and fine; height 3 ft. Coral Queen, lovely coral; a charming variety; height 3 ft. Crimson Queen, deep crimson; a great favourite, and of fine habit; height 2 ft. Comtesse Foucher de Cariel, orange-yellow; excellent and free; height 2 ft. De la Bouere, amaranth; large and fine; height 2 ft. Dorcas, white; bushy habit and free-flowering; height 2 ft. Edie Wright, pale pink, passing to white with age; excellent in every respect; height 2 ft. Edith Syratt, soft pink; wonderfully free and dwarf; height $1\frac{1}{2}$ ft. Gaspard Boucharat, a lovely orange colour, produced in profusion; height 2 ft. General Hawkes, crimsonamaranth; very free; height 2 ft. George Wermig, rich soft yellow; a well-known old favourite; height $2\frac{1}{2}$ ft. Harvest Home, bronzy-red, tipped with gold; very handsome and free; height $2\frac{1}{2}$ ft. Lady Fitzwygram, a splendid early white; height 2 ft. Madame Desranges, white; well known for its excellence; height $2\frac{1}{2}$ ft. Madame Eulalie Morel, a beautiful cerise and gold; height 3 ft. Madame Marie Masse, lilac-mauve; one of the best; height 2 ft. Mytchett White, snowy white; a magnificent

variety ; height $1\frac{1}{2}$ ft. Prefet Cassagneau, deep crimson ; fine habit ; height 2 ft. Ryecroft Glory, deep orange ; most effective ; height $1\frac{1}{2}$ ft. Sam Barlow, a charming salmon-pink ; very free ; height 3 ft. The Don, lilac : profuse and early ; height 2 ft. Vice-President Hardy, deep red ; good habit ; height $3\frac{1}{2}$ ft.

POMPONES.—The small compact-flowered Pompone varieties are greatly admired by many, and are extremely useful for cutting purposes, or for massing in beds. Amongst the many varieties in commerce, the following may be described as of high merit : Alice Butcher, red, shaded with orange ; excellent ; height $2\frac{1}{2}$ ft. Anastasio, pale purple ; very dwarf and bushy ; height $1\frac{1}{2}$ ft. Blanch Colomb, ivory-white ; free and pretty ; height 2 ft. Canari,

yellow ; flowers in great abundance ; height $1\frac{1}{2}$ ft. Early Blush, soft blush ; very fine variety ; height 2 ft. Frederick Pele, crimson and gold ; makes an effective bed ; height 3 ft. Golden Fleece, straw - yellow ; one of the best of its colour ; height 2 ft. L'Ami Conderchet, primrose ; probably the best Pompone ; height 1 ft. Longfellow, pure white ; splendid for cutting or for beds ; height $2\frac{1}{2}$ ft. Madame Jolivart, white, tinged with pink ; very pretty ; height 2 ft. Mrs. Cullingford, white ; excellent ; height $3\frac{1}{2}$ ft. Miss Davis, soft pink ; a sport from Mrs. Cullingford, but dwarfer. Mr. Selley, a blush-white ; very pretty and effective ; height $1\frac{1}{2}$ ft. M. Jules Paquet, white, and violet-rose ; height



FIG. 76.—*COREOPSIS GRANDIFLORA*.

1 ft. Piercy's Seedling, deep yellow ; wonderfully free ; height 2 ft. Silversmith, white, of large size ; a most useful variety ; height 3 ft. Strathmeath, a soft rosy-pink ; excellent ; height 2 ft. Toreador, a rich crimson and gold ; height $2\frac{1}{2}$ ft. Yellow L'Ami Conderchet, deep yellow sport from L'Ami Conderchet.

CIMICIFUGA.—A useful genus of handsome plants, succeeding best in a good, deep, moist loam. Four or five species are met with in gardens, and all are worthy of being included. They do not require any special site, and all flower in late summer and early autumn. *C. americana*, 3ft.; *C. davurica*, 3ft.; *C. japonica*, 2ft.; and *C. racemosa*, 4ft., are the most noteworthy. All have white, feathery flowers, and are good, bold-growing subjects. Propagated by division in late autumn or in spring.

COLUMbine.—See *Aquilegia*.

COREOPSIS is a genus containing several perennials which form graceful border plants. They produce an abundance of showy flowers, which are highly prized for room decoration, &c. Propagated by seeds, cuttings, or division. *C. grandiflora* (syn. *C. longipes*) (Fig. 76) is one of the finest of border plants, and of which someone has said that "a whole page would not adequately describe the merits of this plant; it is simply indispensable." It grows about 2ft. high, and from June to September bears a profusion of large golden-yellow flowers. *C. lanceolata* has also bright golden-yellow flowers, and grows upwards of 3ft. in height. *C. verticillata* is a distinct, slender-growing kind, reaching 2ft. in height, and bearing yellow flowers.

DELPHINIUMS (Larkspurs) are useful subjects for the herbaceous border. The taller-growing kinds are also suitable for shrubberies, &c. Propagated by seeds, cuttings, or division. *D. Brunonianum*, 1ft., is a lovely species, with musk-scented,



FIG. 77.—HYBRID DELPHINIUMS.

dark blue flowers. *D. cashmerianum*, 1½ ft., has large flowers of a slaty hue; it has also a white variety that is desirable. *D. cardinale*, 3 ft. high, yields bright scarlet flowers, with yellow centres, during July and August. *D. grandiflorum* grows 2 ft. high, and in July produces panicles of dark blue flowers. *D. nudicaule* grows only 18 in. high, and bears orange-red flowers with yellow centres. Spring-sown seedlings will flower the first season if given a sunny position. Then there are a host of hybrids (Fig. 77).

DICENTRAS (*DIELYTRAS*) are lovely spring- or early summer-flowering plants. Propagated by cuttings or by division of the crowns in early spring. *D. formosa* has delicate fern-like foliage, and umbels of drooping red flowers, produced during May and June; it grows 1 ft. high. *D. spectabilis* (Bleeding



FIG. 78.—*DIELYTRA SPECTABILIS*.

Heart) (Fig. 78) is a well-known forcing plant, and also one of the best for border culture; it grows 2 ft. high, and flowers during May, June, and July. The flowers are produced on drooping racemes, and are white and rosy-crimson.

DICTAMNUS.—*D. albus* (*Fraxinella*) (Fig. 79) is a favourite old border plant, forming a neat bush from 18 in. to 3 ft. high. It is said that the *Fraxinella* has outlived father, son, and grandson in the same position. It is sometimes known as the "Burning Bush," because of a resinous exudation from the stems, which, when a light is applied, has a luminous appearance at

night. The foliage, when bruised, emits a strong balsamic perfume. The flowers are produced in long terminal erect racemes during June and July, and are white in colour. A form is also grown with reddish flowers; this is generally known as *D. Fraxinella*, whilst the white one is given as a variety. Propagated by seeds or by division.

DIELYTRAS.—See *Dicentras*.

DORONICUMS are handsome spring- and summer-flowering subjects, with large yellow Daisy-like flowers; they are suitable for bed and border culture, and are propagated either by seeds or by division. *D. austriacum* forms a mass of deep glistening green foliage, and bears numerous large golden-yellow flowers from March to May; it grows 18in. high. *D. plantagineum excelsum* (syn. Harpur Crewe) is more robust in habit than the last-mentioned, reaching a height of from 2½ft. to 3ft. It flowers from May to August, the flowers being deep yellow, and upwards of 4in. across.

EPILOBIUMS are showy plants of easy culture, suitable for large borders or for naturalising on the margin of water. Increased by seeds or by division. *E. angustifolium* is a tall plant, growing from 3ft. to 5ft. high, and producing showy crimson flowers during June, July, and August. The variety *album*, with white flowers, is also grown.

E. Dodonei grows from 12in. to 18in. high, and bears large rose-coloured flowers; it is also known as *E. Fleischeri*.

ERIGERONS are summer-flowering composites with beautiful star-shaped flowers; they are increased by either seeds or division. *E. aurantiacus* grows from 6in. to 18in. high, and bears large orange-coloured flowers during August. *E. speciosus* is a showy plant for the mixed border; the flowers are lavender-coloured, and have yellow centres; they are produced during July and August on stems 2ft. high. Its variety *superbus* has large purple flowers, and is very free. Other good kinds are *E. glabellus*, 18in., lilac; *E. macranthus*, 2ft., purple; *E. philadelphicus*, 1ft., pink; and *E. salsuginosus*, 2ft., whitish.

ERYNGIUMS have spiny foliage, and large heads of Thistle-like



FIG. 79.—*DICENTRA ALBA*.

flowers; they are suitable for almost any position, being very effective in mixed borders, shrubberies, and sub-tropical and wild gardens, whilst the flower-heads are prized for winter decoration; they prefer a deep sandy soil, and are propagated by either seeds or division. *E. alpinum* grows from 2ft. to 3ft. high, and forms a distinct and noble border plant, with spiny foliage; the involucres and bracts are deeply cut, and together with the flower-heads and upper portion of the stems are of a glistening metallic-blue colour. *E. giganteum* (Ivory Thistle) (Fig. 80) grows from 2ft. to 4ft. high, and flowers during July and August; the stems, leaves, and bracts are of a shining white colour, and the whole plant is rigid and spiny. *E. Oliverianum* is a beautiful plant, 3ft. high, having handsome laciniated foliage and large heads of bluish flowers, produced during July, August, and September; the bracts, &c., are also blue.

GAILLARIAS are exceedingly handsome border plants, having large showy flowers, which are much valued for the making of bouquets and the decoration of vases. They may be propagated by either seeds, cuttings, or division. *G. aristata* bears large yellow flowers during August, and attains a height of 18in. The varieties *grandiflora* and *maxima* are strong-growing plants with larger flowers than the type. An endless variety of named sorts are now sent out by nurserymen, and in point of beauty these far exceed the plants mentioned above. A selection of these will be found at the end of this Chapter.

GALEGA OFFICINALIS COMPACTA is a neat-growing perennial, attaining a height of from 2ft. to 3ft. It is a free-flowering plant, producing numerous racemes of pea-shaped lilac-coloured flowers from July to September.

GEUMS are showy perennials suitable for the mixed border; the flowers are very rich in colour, and are excellent for cutting purposes. Propagation is effected by seeds or by division.



FIG. 80.—ERYNGIUM GIGANTEUM.

G. chiloense (syn. *G. coccineum*) grows 2ft. high, and bears numerous bright scarlet flowers from May to September; the variety *grandiflorum plenum* has large semi-double flowers. *Heldreichii* (1ft.), orange-red, is a recent addition that should not be omitted.

GYPSOPHILA PANICULATA is a striking plant of gauze-like appearance, and worthy of a place in the best herbaceous border. It forms a dense mass, 2ft. high, and during July and the late summer is covered with myriads of small whitish flowers, which are invaluable for cutting purposes.

HARPALIUM.—See *Helianthus*.



FIG. 81.—*HELIANTHUS MULTIFLORUS.*

perennials suitable for the back of the herbaceous border or for shrubberies, &c. Increased by seeds or by division. *H. multiflorus* (Fig. 81) is an old garden plant with large yellow flowers; it reaches a height of 4ft., and flowers from July to September. The plant generally grown in gardens is the double one—*florum pleno*. *H. rigidus*, formerly known as *Harpalium rigidum*, is a well-known and attractive plant, growing from 3ft. to 4ft. high,

HELENIUMS are valuable composite plants for back positions in mixed borders, or for planting in shrubberies; they have large yellow flowers, which remain in full beauty for a long time, and are therefore much in demand for cutting. Increased by seeds or by division. *H. autumnale* grows 3ft. high, and flowers during July, August, and September; the golden-yellow flowers, which are 3in. across, are produced in abundance. The variety *grandiflorum* is similar in habit to the type, but has much larger flowers. *H. Bolanderi* grows 2½ft. high, and is a showy plant producing rich yellow flowers with dark brown disks. It flowers in July and August. *H. Hoopesii* is a grand border plant, 2ft. high, and bearing clustered heads of bright yellow flowers, each of which is 2in. across.

HELIANTHUS (Sunflower). This genus contains several showy

and flowering from July to September; the flowers are bright yellow, with dark disks, and are upwards of 4in. across.

HELIOPSIS LEVIS is a handsome composite plant, suitable for the back of the flower border; it grows from 3ft. to 6ft. high, and produces terminal heads of deep orange-yellow flowers from July to September.

HESPERIS MATRONALIS (Rocket, or Dame's Violet) is a free-flowering plant, suitable for the mixed border. It has whitish or purplish flowers, produced in June and July. The variety *flore-pleno* is the old double white Rocket. Increased by seeds, cuttings, or division.

HEUCHERA SAN-
GUINEA (Alum Root) is a splendid plant for borders and rock-work. It grows from 9in. to 18in. high, and produces long graceful spikes of crimson-scarlet flowers from June to August. These, when seen in a mass, in full sunshine, produce a dazzling effect. The flowers are invaluable for cutting purposes. Increased by seeds or by division.

INCARVILLEA. — A genus that of late has come into prominence by reason of the introduction of the beautiful species *I. Delavayi* (Fig. 82). It has rosy-purple, Gloxinia-like flowers, produced in August and September. At one time its hardiness was doubted, but it has since proved itself robust enough to withstand our climate outside. *I. Olga*, though hardly so attractive, is nevertheless a beautiful perennial, with flowers of a soft rose, produced a little earlier. Both should be planted in late autumn, and given a deep, well-drained, loamy soil.

INULAS are well-known composites, with large showy yellow flowers, suitable for borders, shrubberies, wild gardens, &c.



FIG. 82.—*INCARVILLEA DELAVAYI*.

Increased by seeds or by division. *Inula glandulosa* (Fig. 83) is a well-known plant, and one that is greatly admired. It grows about 2ft. high, is of neat habit, and during July and August produces golden-yellow flowers 4in. across.

I. Helenium (Elecampane) (Fig. 84) is a strong-growing species, from 3ft. to 5ft. high, producing large leaves and gigantic heads of showy yellow flowers. Its flowering period is from July to September.



FIG. 83.—*INULA GLANDULOSA*.



FIG. 84.—*INULA HELENIUM*.

I. Hookeri grows from 1ft. to 2ft. high, and bears large yellow flowers during August and September.

ISOPYRUM THALICTROIDES. — This is a very graceful perennial that might often be employed. As its specific name implies, it approaches the Thalictrums. Being of dwarf habit (3in.), it is suited for either the front row of the border or the rockery. The flowers are small and white, and the leaves maiden-hair like.

LARKSPURS. — See Delphiniums.

LATHYRUS is a large genus of the Pea family, and comprises numerous perennial, as well as annual, plants. The perennials are handsome climbers, suitable for growing over pyramids of twiggish sticks in the mixed border, or for trailing over trellises, verandahs, &c. Increased by seeds or by division. *L. latifolius* (syn. *L. sylvestris platyphyllus*) is the Perennial Pea. It grows from 5ft. to 6ft. high, and produces its flowers from July to September. They are of a bright rose colour, and are much valued for cutting purposes. Several varieties are also grown, including *albus*, with white, and *splendens*, with rosy-carmine, flowers, borne in large clusters. *L. rotundifolius* grows 18in. high, and has beautiful rose-coloured flowers. It is an excellent plant for the rock garden or for stony banks.



FIG. 85.—LIATRIS SPICATA.

genus, and produces long spikes of purple flowers during August and September. It grows from 1ft. to 2ft. high, and forms an excellent border plant.

LINARIAS are handsome annual and perennial plants, of easy culture, suitable for front positions in the border. The perennials are increased by seeds or by division. *L. triornithophora* grows 18in. high, and produces purple flowers with yellow throats, generally three together, in a whorl, like three birds perched on a spur. The flowering season is from June to September. If seeds are sown early in spring, the plants so obtained will flower the same summer. *L. dalmatica*, 3ft., is a strong yellow-flowered species.

LINUMS (Alpine Flaxes) are excellent plants for the border. Propagated by seeds or by cuttings. *L. perenne* is the best of the genus, light and elegant in habit, and very effective, whether grown in mixed borders or in the rock garden.

LIATRIS (Blazing Star) is a genus of North American plants, of easy culture in any good garden soil. They are increased by seeds or by division. *L. spicata* (Fig. 85) is the best of the

LORELIA.—The perennials of this genus are bold-growing subjects, producing a fine effect in late summer and autumn. The best are *L. cardinalis*, 1½ ft., scarlet; *L. fulgens*, 3 ft., Firefly and Queen Victoria; *L. Milleri*, 3 ft., rich purple; and *L. siphilitica*, 2 ft., bright blue, best grown in a moist situation. The roots need to be covered with light litter in severe weather.

LUPINUS (Lupin) is a genus of the Pea family. The species form very effective border plants, with elegant racemes of flowers, highly prized for cutting. Increased by seeds or by division. *L. nootkatensis* is a handsome plant growing 18 in. high, and producing racemes of dark blue flowers, mixed with purple, white, or yellow. Its flowering period is from May to July. *L. polyphyllus* grows 3 ft. high, and flowers from June to September. The flowers are very showy, bluish-purple in colour, and arranged in whorls on a handsome spike.

LYCHNIS.—In this we have a genus of showy, free-flowering subjects, of easy culture, suitable for the mixed border. Propagated by seeds or by division. *L. chalcedonica* grows 3 ft. high, and produces large heads of dazzling scarlet flowers from June to August. A white variety, and one with double flowers, are also grown. *L. coronaria* grows from 2 ft. to 3 ft. high, and during July bears red flowers, which are much prized for cutting purposes. The varieties *grandiflora* and *hybrida splendens* are well worth growing. *L. Haageana* grows 1 ft. high, and flowers from June to August: it is a very showy plant, bearing large scarlet flowers, 2 in. across. Numerous varieties are now grown with flowers embracing almost every shade of colour, from brilliant scarlet to pure white; these are valuable subjects for select positions in the mixed border or for beds. *L. Viscaria splendens flore-pleno* is one of the showiest of our dwarf hardy perennials, and suitable alike for the mixed border or for forming beds in the flower garden. It grows from 12 in. to 18 in. high, and flowers from June to August: the rich rosy-crimson flowers are large and double, and closely arranged on erect wiry stems, after the fashion of the flowers of a Stock.

MALVA MOSCHATA (Musk Mallow) is a favourite border perennial, growing 2 ft. high, and producing an abundance of fragrant rose-coloured flowers, 2 in. across. Its flowering period is from June to August. A white variety is also grown. These are wonderfully effective border plants, and the flowers are suitable for cutting. Increased by seeds or cuttings.

MIMULUS (Monkey Flower).—In this genus are several herbaceous perennials which delight in warm, damp positions, and are deserving of culture in mixed borders, vases, or hanging baskets. They are noted for their richly-marked and brightly-coloured flowers. Increased by seeds, cuttings, or division. *M. cardinalis* is a profuse-flowering species, reaching a height of

18in.; the flowers in the typical plant are of a bright scarlet colour, but other forms are grown with various coloured flowers, some being crimson, others flesh-coloured, orange, yellow, &c. Flowers from June to August. *M. moschatus* (Musk) is a well-known plant, growing 6in. high, and producing small yellow flowers from June to September; it is very sweet-scented, and on this account is largely grown in the conservatory and sitting-room. The variety known as *Harrisonii* is also a popular favourite; it has larger flowers, and grows much stronger than the type.

MONARDA DIDYMA (Bergamot or Oswego Tea) is an attractive plant for the mixed border, being particularly effective when grown in a mass; it reaches a height of 2ft. or 3ft., and its foliage is sweetly scented. Its flowers, which are borne in whorls, are bright crimson, whilst the bracts are also tinged with red. Flowers from June to August.

MORINA LONGIFOLIA is a handsome border plant, with deep green Thistle-like foliage, and spikes of flowers in crowded whorls. In the bud state the flowers are white; when they open they change to a delicate pink, and afterwards assume a crimson colour. As flowers in all three stages are to be found on the

same whorl, at
the same time,
a very pretty
effect is pro-
duced. It grows
2ft. high, and
flowers during
June and July.
Propagated by
careful divi-
sion.



FIG. 86.—*ENOOTHERA CÆSPITOSA*.

and yielding large showy flowers, which are closed during the day and open in the evening. They are suitable subjects for the mixed herbaceous border, or for shrubberies, wild gardens, &c. The perennials are increased by either seeds, cuttings, or division. *E. cæspitosa* (Fig. 86), known also as *E. eximia* and *E. marginata*, is a dwarf-growing species, 6in. to

ENOOTHERAS
(Evening Prim-
roses) are most
attractive and
free - flowering
plants, ranging
in height from
a few inches
to 3ft. or 4ft.,

12in. high, and bearing large snowy-white flowers, deliciously fragrant, and changing with age to a delicate rose-colour. It increases rapidly by means of underground shoots. Flowers from July to September. *E. Fraseri*, a variety of *E. glauca*, forms a bushy plant, 18in. high; it is a beautiful plant, with reddish stems and dark foliage, speckled with yellow. Its flowers are yellow, and are produced in abundance from June to September. *E. speciosa* is a grand border plant, attaining a height of from 1½ft. to 3ft., and producing a succession of large fragrant flowers, 2in. across, from June to September; when they first open they are pure white, but as they grow older they assume a reddish hue.

OROBUS (Bitter Vetch).—These are small plants, formerly kept up as a distinct genus, but now included under that of *Lathyrus*. They differ from the plants generally known as *Lathyrus* in having no tendril at the end of the leaf. Increased by seeds or by division of the root-stock. *O. luteus* (now known as *Lathyrus montanus*) is an elegant bushy plant, growing from 1½ft. to 2ft. high, and producing numerous racemes of bright yellow flowers during the month of June. *O. vernus* (*Lathyrus vernus*) (Spring Vetch) is a showy plant, growing 1ft. high, and forming compact tufts of light green foliage. The flowers are borne in racemes during April and May, and are of a rich blue or purple colour. A white variety is also in cultivation.

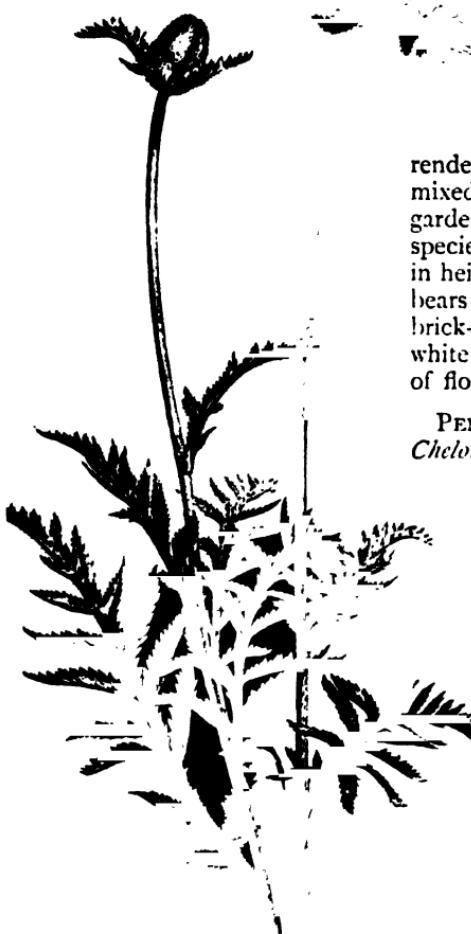
PÆONIA is a large and well-known genus of hardy perennials, suitable for either beds or the mixed border; they are of easy culture, and delight in a good loamy soil, enriched with plenty of farmyard manure. Their flowering period is during May and June. Increased either by seeds or by division. *P. albiflora* is a handsome species, growing from 2ft. to 3ft. high, and bearing large white flowers. *P. anomala* has beautifully cut foliage and solitary crimson flowers. *P. arietina* grows 2ft. high, and has dark red flowers. *P. decora* has purple flowers; it grows from 2ft. to 3ft. high. *P. officinalis* has large red flowers; several varieties of it are in cultivation. *P. tenuifolia* grows from 1½ft. to 2ft. high, has graceful feathery foliage, and dark crimson flowers; the variety *flore-pleno* differs only in having double flowers. The genus has been largely worked upon by the hybridist, with the result that there are now innumerable named garden forms in cultivation. A selection of these will be found at the end of the Chapter.

PAPAVER (the Poppy genus) contains several hardy perennials of easy culture in ordinary garden soil. Propagated by seeds or by division. *P. orientale* (Giant Oriental Poppy) is an old-fashioned border-plant, growing 3ft. high, and producing its flowers from May to August. It is a very showy plant, with enormous crimson-scarlet flowers, upwards of 6in. across. There is a dark

blotch at the base of each petal. Its variety (*P. bracteatum*, Fig. 87), sometimes described as a distinct species, is also a charming plant, differing from the type in having deep blood-crimson flowers, but with the characteristic black blotch at the base



of each of the petals. Numerous named forms of the Oriental Poppy are now grown; their bold aspect, and large showy flowers in all shades of crimson and scarlet, render them magnificent plants for mixed borders, shrubberies, wild gardens, &c. *P. pilosum* is a distinct species, growing upwards of 2ft. in height. It has woolly foliage, and bears numerous flowers of a peculiar brick-red colour. Each petal has a white mark at the base. Its time of flowering is from May to July.



PENTSTEMON BARBATUS (syn. *Chelone barbata*) is a showy plant, bearing spikes of attractive scarlet flowers. It grows upwards of 3ft. high, and flowers from June to September, or even later. It is an excellent plant for the mixed border or for forming beds in the flower-garden. Easily increased by seeds or by cuttings. Numerous florists' varieties of Pentstemons are now grown in gardens. See list at end of Chapter.

PHLOX is a genus containing several annual as well as perennial plants, many of which are very effective in flower-beds and borders. They are easily propagated by either seeds, cuttings, or division. *P. paniculata* grows 3ft. high, and produces large terminal panicles of pink,

FIG. 87.—PAPAVER BRACTEATUM.

propagated by either seeds, cuttings, or division. *P. paniculata* grows 3ft. high, and produces large terminal panicles of pink,

purple, or white flowers during August. The genus, however, is one that has lent itself to the hybridist, and to-day we have a host of kinds superior to the species. Some of the best are here described: Avalanche, white, 2ft.; Leonardo da Vinci, white, with maroon centre, 2 $\frac{1}{2}$ ft.; Madame Antoine Denis, blush-white, crimson centre, 2ft.; William Robinson, soft rose, crimson centre, 3ft.; Le Siecle, rose-pink, white centre, 2ft.; Coquelicot, orange-red, 2 $\frac{1}{2}$ ft.; Etna, orange-scarlet, 2 $\frac{1}{2}$ ft.; Moliere, salmon-rose, purple centre, 2ft.; Eugene Danzanvilliers, soft lilac, white eye, 1ft.; Esclarmonde, lilac, shaded white, 2 $\frac{1}{2}$ ft.; Snowdon, snow-white, 2ft.; Eclatant, salmon-scarlet, crimson centre, 1 $\frac{1}{2}$ ft.; Jourdan, rose-pink, 1 $\frac{1}{2}$ ft.

PHYGELIUS CAPENSIS (Cape Figwort) is an attractive plant, growing 2 $\frac{1}{2}$ ft. high, and producing tubular scarlet flowers on pyramidal spikes during August and September. Increased by seeds or by cuttings. Prefers a sheltered situation.

PHYSALIS is a small genus containing two or three ornamental perennials suitable for growing in the front of the herbaceous border. They are easily increased by division. *P. Alkekengi* (Winter Cherry, or Chinese Lantern) grows from 12in. to 18in. high, and bears numerous inconspicuous white flowers, succeeded in autumn by scarlet berries, enclosed in the inflated orange-scarlet calyx. *P. Francheti* is a very ornamental species, taller growing than *P. Alkekengi*, and producing a larger bladder-like calyx of a bright orange-red colour. The fruits enclosed in the inflated calyx are useful for winter decoration when they are cut and dried.

POLEMONIUMS are free-flowering plants, suitable for border or rock-culture, and are readily propagated by seeds or by division. *P. caeruleum*, commonly known as Jacob's Ladder, grows from 1ft. to 2ft high, and bears heads of blue flowers from May to July. Several varieties are now grown, including one with variegated foliage, and another with white flowers. *P. himalayanum* is a bold-growing plant, 2ft. high, having fern-like foliage, and large heads of azure-blue flowers with yellow eyes. *P. reptans* is a neat-growing species, 6in. to 12in. high, with a creeping rootstock; it has graceful foliage, and produces an abundance of pale blue flowers during April and May.

POLYGONUMS are plants of easy culture in ordinary garden soil, and are readily increased by division. *P. polystachyum* is a strong-growing species, reaching a height of 5ft., and having fragrant white flowers; it is suitable for naturalising in the shrubbery or wild garden. *P. vaccinifolium* is a trailing species; it produces long spikes of rose-coloured flowers in the autumn.

POTENTILLAS (*Cinquefoils*) are free-flowering plants, of easy culture in the mixed border. Readily increased by seeds or by division. *P. argyrophylla*, known also as *insignis*, is an excellent border-plant, attaining a height of 2ft.; it has fine silvery foliage, and yellow flowers 1in. in diameter. The variety *atrosanguinea* has dark crimson flowers, produced from May onwards during the summer. *P. nepalensis* (syn. *P. formosa*) is a plant growing from 18in. to 2ft. high, and yielding an abundance of flowers from June to August; they are rosy-pink in colour, with dark centres. This is an excellent plant for the mixed border or for back positions in the rock garden. Numerous florists' varieties are also grown. See list at end of Chapter.

PYRETHRUMS are effective border plants, thriving in any good garden soil. They are now included under *Chrysanthemum*.

Easily increased by either seeds, cuttings, or division.

P. parthenifolium aureum is well known under the name of "Golden Feather," and is largely used in summer-bedding arrangements, but only on account of its pretty foliage.

P. Parthenium (Common Feverfew) is a magnificent border plant, growing 2ft. high, and producing its white flowers with yellow disks during June. The whole plant has a very strong smell. Its variety *flore-pleno* is a handsome plant, and differs only in having double white flowers.

P. roseum is a plant, growing from 1ft. to 2ft. high, and



FIG. 88.—PYRETHRUM ROSEUM
FLORE-PLENO.

flowering during June and July; the florets of the disk are yellow, whilst those of the ray are rose-coloured. *P. roseum flore-pieono* (Fig. 88) grows upwards of 2ft. high, and produces an abundance of showy semi-double rose-coloured flowers, which are greatly prized for cutting purposes. *P. Tchihatchewii* (Russian Daisy) is a valuable plant for dry banks and slopes, or for growing under trees, in which position it retains its green colour, even during dry weather. The leaves are very much divided; the stems grow 9in. high, and bear small white flowers with yellow disks. *P. uliginosum* (see *Chrysanthemum uliginosum*). A large number of florists' varieties of Pyrethrums are now in cultivation, and these form splendid subjects for the mixed border.

ROMNEYA COULTERI (Californian Bush Poppy) is a very charming plant, delighting in a warm, sunny position, and a light, deep soil. It grows from 4ft. to 6ft. high, and has deeply-cut foliage of a glaucous hue. The flowers are snowy-white, and Poppy-like in appearance (Fig. 89), often 4in. to 6in. across, with crinkled petals and golden-yellow stamens.

RUDBECKIAS (Cone Flowers) are showy, free-flowering, composite plants, suitable for back positions in the mixed border, or for growing in semi-wild situations, &c. The flowers are prized for cutting purposes. Increased either by seeds or by division. *R. californica* is a noble plant with large plantain-like leaves, and golden-yellow flowers, having brown Acorn-like centres. It grows from 4ft. to 6ft. high, and flowers during July, August, and September.

R. laciniata has stems 5ft. or 6ft. high, and large leaves, which are deeply cut. The flowers are yellow, and have a dark conical disk. *R. l. flore-pleno* is a very fine double form of the above, with long, graceful, branching stems, and beautiful yellow flowers, having rather long petals. *R. maxima* is a vigorous-growing plant, upwards of 7ft. in height, which from July to September bears large yellow flowers, with black disks. The flowers are 3in. or 4in. across. *R. speciosa*, known also as *R. Newmanii*, is one of the handsomest in the whole genus, growing from 2ft. to 3ft. high, and producing large yellow flowers with black disks. Its season of flowering is July and August.

SENECIO is a genus of composite plants of annual, biennial, and perennial duration, and of easy culture in any ordinary garden soil. The perennials are readily increased by means of seeds, cuttings, or division of the old plants. A good many



FIG. 89.—**ROMNEYA COULTERI.**

of them are weedy subjects, but the two following, along with a few others, might with advantage find a place in the mixed border. *S. doronicum* forms a dense mass of dark green foliage, and bears large golden-yellow flowers on stems 12in. high; these are produced from June to

August, and are very showy and useful for cutting. *S. fulcher* (Fig. 90) is a handsome border-plant, flowering in the late autumn; it has purplish-crimson flowers with yellow disks, borne on a branched flower-stem. It grows about 2ft. high.

SIDALCEAS are free-flowering showy plants, suitable for the mixed border. *S. candida* grows from 2ft. to 3ft. high, and flowers from June to August; the flowers are pure white, and are borne in long terminal racemes. *S. Listeri* is a showy perennial of recent introduction; it grows about 3ft. high, and from July to September bears an abundance of satiny-pink flowers, with beautifully-fringed sepals. *S. malvaeflora* produces racemes of rosy-purple flowers on stems 1½ ft. high.

SOLIDAGO (Golden Rod).—This genus contains several coarse-growing plants, suitable for naturalising in semi wild parts of

the garden, or for back positions in the mixed border. Increased by seeds or by division. *S. rugosa* (syn. *S. altissima*) grows from 4ft. to 5ft. high, and bears yellow flowers from July to October. *S. Virgaurea nana* is a dwarf and compact form of the common Golden Rod, suitable for the mixed border; it grows 2ft. high, and bears golden-yellow flowers in late autumn. *S. canadensis*, *S. gigantea*, *S. grandiflora*, &c., are advertised in nurserymen's catalogues; they are coarse-growing plants, reaching a height of 4ft. or 5ft., and bearing large yellow flowers.

SPIRAEAS (Meadow Sweets) are plants of easy culture, very ornamental when grown in mixed borders, shrubberies, or in moist situations, such as the margins of lakes, ponds, &c. They are readily increased by division. *S. Aruncus* (Goat's Beard) (Fig. 91) is a majestic plant, growing from 3ft. to 5ft. high, and producing long feathery plumes of white flowers during June and July. *S. astilboides* is an excellent plant for either pot



FIG. 90.—SENECIO PULCHER.

or border culture; it grows upwards of 3ft. high, and from June to August produces dense plumes of feathery white flowers. The variety *floribunda* is rather dwarf in habit, but bears larger plumes. *S. Filipendula flore-pleno* (Double Dropwort) is a low-growing plant with fern-like foliage and branching panicles of creamy-white double flowers, which are suitable for cutting. It reaches a height of 2ft., and is to be seen at its best during June and July. *S. palmata* (Fig. 92) is a handsome plant, delighting in marshy ground, near the banks of streams, ponds, &c., and also growing luxuriantly in damp, shady borders; it grows 2ft. high, and bears large heads of crimson flowers from June to August. A white variety is also grown. *S. Ulmaria* (Common Meadow-sweet) is a plant enjoying similar situations to the last-mentioned species; it grows 2ft. and upwards in height, and yields heads of white flowers from June to August. The variety *flore-pleno* has sweet-scented double white flowers, whilst *aurea* or *aureo-variegata* has golden variegated foliage and creamy-white flowers.



FIG. 91.—SPIREA ARUNCUS.

STATICE is a genus of very graceful plants suitable for the rockery or mixed border. *S. Gmelini* grows from 1½ft. to 2ft.

high, and produces spreading panicles of small dark blue flowers. *S. latifolia* (Great Sea Lavender) grows upwards of 2½ ft. high, and forms large heads nearly 2 ft across, composed of deep lavender blue flowers; these are invaluable for winter decoration, as they last for months after being cut. *S. Limonium* also grows about 2 ft in height, and yields panicles of

S. tatarica are described under "Rock Plants."

THALICTRUMS are ornamental plants, of easy culture. Propagated by seed or by division. *T. aquilegifolium* is a fine decorative plant, having large

feathery heads of white or cream-coloured flowers, and foliage reminding one of that of the Columbine. It grows from 2 ft. to 3 ft. high, and flowers during June and July.



FIG. 93.—THERMOPSIS MONTANA.



FIG. 92.—SPIRAEA PALMATA.

THERMOPSIS MONTANA (syn. *T. fabacea*) (Fig. 93) is an attractive plant, growing 2 ft. high, and flowering during June and July; the yellow Lupin-like flowers are borne in terminal racemes. It is best propagated by seeds, as the roots do not stand division well.

TRADESCANTIA VIRGINICA
 (Common Spiderwort) is a showy plant with purplish-blue flowers. It grows upwards of 2ft. high, and produces its flowers from May onwards. It is suitable for mixed borders or for naturalising in shrubberies, wild gardens, woodland walks, &c. Several varieties are also grown, and are readily increased by division.

TROLLIUS (Globe Flower) is a genus of elegant border plants, with luxuriant foliage and handsome yellow flowers. They prefer rather moist situations. Propagated by seeds or by division of the old plants in the autumn. *T. asiaticus* grows from 1ft. to 2ft. high, and produces bright orange-coloured flowers during May and June. *T. europaeus* (Common Globe Flower) grows from 12in. to 18in high, produces large globular pale yellow flowers from April to June, and is an excellent subject for naturalising near ponds or streams.

T. asiaticus (Orange Globe) (Fig. 94) is a beautiful variety, with golden - yellow flowers, and grows 2ft. high.



FIG. 94.—TROLLIUS ORANGE GLOBE.



FIG. 95.—VERONICA LONGIFOLIA SUBSESSILIS.

VERONICAS (Speedwells) are fine border plants, easily cultivated in any ordinary garden soil. The herbaceous perennial kinds may

grow from April to June, and is an excellent subject for naturalising near ponds or streams. Orange Globe (Fig. 94) is a beautiful variety, with golden - yellow flowers, and grows 2ft. high.

be increased by either seeds or by division. *Veronica gentianoides* grows from 9in. to 18in. high, and produces long racemes of pale blue or violet-coloured flowers during May and June. There is also a white-flowered variety, and one with variegated leaves. *V. longifolia* grows about 2ft. high, and bears racemes of lilac or blue flowers from July to September. Several varieties are in cultivation; the one known as *subsessilis* (Fig. 95) is an extremely pretty border-plant, growing from 2ft. to 4ft. high, having serrated leaves and long massive spikes of beautiful blue flowers. *V. spicata* is a good border-plant, producing dense spikes of bright blue flowers upwards of 3in. long. It grows from 9in. to 18in. high, and flowers during July and August.

THE SWEET VIOLET (*Viola odorata*).—To grow these sweet-scented flowers to perfection they must have a rich, fairly moist soil, a partially shaded situation, and a position that is open. In town gardens and under the shade of trees they cannot be cultivated. Another point to remember is that old, worn-out clumps should not be retained; their place should be taken by strong, healthy plants from runners, which may be obtained in abundance if during late spring some leaf-mould, or other manure, and sand is distributed over the bed to a depth of an inch or so, and into this the newly-formed runners will soon root. The greatest success is, however, obtained by the system of frame-culture so largely adopted. This may consist in covering the plants in the bed where possible, or in making up a special bed by lifting the plants in early autumn, and transferring them with good balls of soil to the frames. No coddling is necessary, and the lights should be left off whenever the weather is suitable. In this case it is best to have fresh plants each season.

Red Spider and a form of *Puccinia* sometimes attack the plants, but a spraying with sulphide of potassium (1oz. to the gallon of water) will usually keep both these pests in check. Violets may be had in perfection from late autumn till spring.

The best varieties are Admiral Avellon, California, Comte de Brazza (Swanley White), De Parme, Devoniensis, Lady Hume Campbell, Marie Louise (the best for winter), Mrs. J. J. Astor, Neapolitan (another good winter variety), Princess Beatrice, Princess of Wales, Victoria Regina, and Wellsiana.

The following are additional species and varieties; while other herbaceous subjects will be found in the chapter upon Rock Plants:

Acanthus

HISPANICUS, fl. white; 2ft.; August.
MOLLIS, large ornamental l.; white fl.; 3ft.

Achillea

EUPATORIUM, fl.-heads golden yell.; 3ft.; *MILLEFOLIUM ROSEUM*, fl.-heads rose-coloured; 3ft. *MONGOLICA*, pure

white single fl.; 1½ ft. *PTARMICA SNOWBALL*, pure white dbl. fl.; 1 ft. *P. THE PEARL*, pure white dbl. fl.; 2ft. *TANACETIFOLIA*, large heads of pale yell. fl.; 2½ ft.

Aconitum

AUTUMNALE, large lavender blue fl.; 3ft. to 4ft.; late autumn. *BRAUNII*,

Aconitum (contd.)

fl. bluish-purple; 4ft.; July and August. *DECORUM*, fl. deep purple. *JAPONICUM*, fl. flesh-coloured; 6ft.; July to September. *PYRENAICUM*, fl. pale yel.; 3ft. to 4ft.

Actaea

ALBA, fl. white; 1ft. to 1½ft.; May and June. *RACEMOSA*, fl. white in long racemes; 3ft. *SERPENTARIA*, fl. white, small, in long trusses; 4ft.; May and June. *SPICATA FRUCTU-RUBRO*, small white fl., succeeded by bright coral-red berries; 1½ft.; May and June.

Anchusa

BARRELLIERI, fl. blue with white tube and yel. throat; 1ft. to 2ft.; May. *B. FOLIA VARIEGATA*, fl. blue; l. blotched with gold. *ITALICA*, rich Gentian-blue fl.; 3ft.; June to August. *MYOSOTIDIFLORA*, fine blue fl., throat yel.; 1ft.; July.

Aquilegia

CANADENSIS, fl. sc., tipped with green; 2½ft. *C. NANA*, deep sc. and yel. fl.; 1ft. *CG.RULEA LUTEA*, large light yel. fl. *NIVEA GRANDIFLORA*, white semi-dbl. flowers. *SKINNERI*, l. glaucous; fl. orange-sc. with long spurs.

Armeria

CEPHALOTES ALBA, white; 1ft.; May to August; *C. KUBKA*, deep red fl.; 1ft.; May to July. *DIANTHOIDES*, fl. light pink; May and June. *LATCHEANA*, dense compact green tufts, small spikes of red fl.; 6in.; May to August. *MARITIMA*, fl. pink or lilac; 6in. to 12in.; June to August. *M. ALBA*, fl. white.

Arnebia

ECHINOIDES, fl. tubular, rich golden-yel., with five black spots, which gradually fade; 1ft.; April to July.

Arnica

CHAMISSONIS, fl.-heads yel.; 1ft. *MONTANA*, orange-yel.; 9in.; July and August.

Asclepias

INCARNATA, rosy-purple, fragrant; 3ft.; July. *TUBerosa*, fragrant, bright orange fl.; 2ft.; July.

Aster

CORDIFOLIUS, lavender-blue; 2½ft.; August and September. *CORYMBOSUS*, small creamy-white fl.; 1½ft. *DIPLOSTPHIOIDES*, light purple, with yel. disk; 1¼ft. *FORMOSISSIMUS*, rosy-lilac; 4½ft.; August and September. *LINDELEYANUS*, pale violet; 2ft. *LINOSYRIS (GOLDILOCKS)*, flax-like l.; showy yel. fl.; 2ft.; July and August. *NOVÆ-ANGLÆ RUBER*, cr.; 4ft.; September and October. *N.-A. WILLIAM BOWMAN*, violet-purple, with golden-bronze disk; 3ft.; September and October. *NOVI-BELGII NEPTUNE*, bluish-purple; 3½ft.; September and October. *N.-B. ROBERT PARKER*, bluish-lilac, with yel. centre; 5ft.; September and October. *PANICULATUS*, lavender; 3ft.; August and September. *PSEUDAMELLUS*, bluish-purple; 1½ft. *SIELLATA*, reddish shade; 3ft.; September and October. *TOWNSHENDII*, purple, with yel. disk. *TRICEPHALUS*, bright purple; 2ft. *VERSICOLOR*, white shading to rose; 3ft.; August and September.

Baptisia

AUSTRALIS, racemes of showy blue Pea-shaped fl.; 3ft.; June and July. *LEUCANTHA*, fl. white in erect raceme; 3ft.

Boltonia

ASTEROIDES, fl. flesh-coloured, Daisy-like; 2ft. to 4ft.; August. *A. DECURRENS*, pink Michaelmas Daisy-like fl.; 4ft.; September and October. *GLASTIFOLIA*, fl. pink; 1½ft. to 3ft.; September.

Buphthalmum

GRANDIFLORUM, fl.-heads yel.; 1½ft.; June to September. *SALICIFOLIUM*, showy golden-yel. fl.; 2ft.; July to September. *SPECIOSUM*, massive l.; large orange-coloured fl.; 3ft.; June to September.

Caltha

LEPOSEPALIA, fl. white; 9in.; May and June. *PALUSTRIS FIORE-PLENO*, suitable for moist places; dbl. golden-yel. fl.; 9in.; April and May. *P. PURPURASCENS*, purplish stems and yel. fl. *RADIANS* bright yel.; 6in.; April and May.

Campanula

ALTIARIA FOLIA, fl. white; 3ft. *GLOMERATA ALBA*, white; 1½ft.; May

Campanula (contd.)

to July. *GRANDIS*, blue fl.; 3ft.; May and June. *LACTIFLORA*, fl. white, tinged blue; 2ft. to 4ft.; June and July. *LATIFOLIA MACRANTHA*, purple; 3ft.; June to August. *L. M. ALBA*, pure white fl. *PUNCTATA*, fl. white, spotted red on inner surface; 1½ft.

Centaurea

ALBICANS, fl. white; 1ft.; July and August. *BABYLONICA*, silvery-white l.; Thistle-like heads of yel. fl.; 6ft.; July and August. *PARLATORIS*, l. silvery, deeply-cut; 2ft. *UNIFLORA*, fl. heads purple; 9in. to 15in.

Centranthus

RUBER, rose-coloured fl. in dense heads; 2ft.; May to August. *R. ALBUS*, fl. white.

Chrysanthemum

ARGENTFUM, fl.-heads white; 1ft.; July. *LATIFOLIUM*, large snow-white fl., yel. centres; 2ft.; July to October. *LEUCANTHEMUM GRANDIFLORUM*, pure white fl.; 2ft. *L. SEMI-DUPLEX*, fl. with slender white petals in centre; June to August. *MAXIMUM FILIFORME* or *FIMBRIATUM*, white thread-like petals; 2ft.; June to August.

Chrysogonium

VIRGINIANUM, bright golden fl.; 1ft.

Cimicifuga

CORDIFOLIA, black stems; spikes of white feathery fl.; 3ft. to 4ft.; August and September. *JAPONICA*, feathery white fl.; 2ft. *RACEMOSA*, large glossy l.; long graceful racemes of drooping white fl.; 4ft.; July to September.

Codonopsis

OVATA, bell-shaped blue fl., speckled white.

Delphinium

BRUNONIANUM, purplish-blue. Musk-scented; 2½ft.; July. *CASHMIRIANUM*, fl. lilac-blue; 1½ft.; July. *C. ALBUM*, variety with white fl. *ELATUM CELESTINUM*, fl. light blue; 3ft. *GRANDIFLORUM ALBUM*, fl. satiny white; 2ft. *ZALIL*, branching spikes of clear yel. fl.; 2ft.; July and August.

Digitalis

GLOXINIÆFLORA, fl. yel.; 3ft. *G. ALBA*, large white fl. *G. PURPUREA*, purple-cr. spotted fl. *GRANDIFLORA*, yel.; 3ft.; July and August. *LEVIGATA*, fl. dull yel., with white lip; 2ft. to 3ft.; July. *LANATA*, small whitish fl., netted inside with brown; 2ft.; July and August.

Dracocephalum

GRANDIFLORUM (ALTAICENSE), blue; 6in.; July. *RUYSCHIANUM (ARGUNENSE)*, fl. blue; 1½ft.; June to August. *R. SUPERBUM*, rich Gentian-blue fl. *SPECIOSUM*, fragrant, pinkish-blue fl.; 1½ft.; June to August.

Echinops

BANNATICUS (RUTHENICUS), fl. blue; 3ft.; July and August. *RITRO*, curious hedgehog-like heads of blue fl.; 3ft.; July and August. *SPHEROCEPHALUS*, laciniate silvery l.; heads of white fl.; 4ft.; August and September.

Eryngium

AMETHYSTINUM, fl. metallic blue, stems blue; 2½ft.; August. *DICHOTOMUM*, blue fl., in round heads; 3½ft.; August and September. *MARITIMUM*, silvery grey l.; pale blue fl.; 1ft.; July and August. *PLANUM*, blue, round Thistle-like heads; 3ft.; July and August.

Eupatorium

AGERATOIDES, heads of white Ageratum-like fl.; 3ft.; August and September. *AROMATICUM (MELISSOIDES)*, fl. white; 4ft.; July and August. *CANNABINUM*, fl. reddish-purple; 3ft.; July. *PURPUREUM*, fl. purple; 3ft. to 5ft.; August and September.

Gaillardia

AURORA, yel., with orange-sc. disk. *COLINA*, cr., with gold edge. *JAMES KELWAY*, dazzling sc., golden edge. *MAGICIAN*, orange-sc., with rich yel. border. *MR. PITCHER*, fiery cr., bright yel. margin. *ST. BLAISE*, blood-red, edged with yel. *VIVIAN GREY*, large yel. *WILLIAM KELWAY*, bright sc., with golden edge.

Geranium

ARMENUM, fl. purple-cr. with black veins; 2ft.; June and July. *ENDRESSI*,

Geranium (contd.)

fl. bright rose; 2ft.; May to August. *IBERICUM*, fl. large purple-blue; 2ft.; June and July. *SANGUINEUM*, cr.; 1ft.; July. *S. LANCASTRIENSE*, soft pink fl., veined purple, 9in. *WALLICHIANUM*, large blue or purple fl.; 6in.; June.

Gerbera

JAMESONI, fl. Gazania-like, orange-scarlet; 1. *Lactuca*-like, in tufts.

Geum

CHILOENSE MINIATUM, orange-scarlet; 1½ ft.; July. *ELATUM*, fl. golden-yellow; 1ft. to 2ft. *REPTANS*, yellow; 6in.; June and July. *STRICTUM*, striped; 1ft.; June and July. *SYLVATICUM*, yellow; 1½ ft.; April to August.

Helenium

AUTUMNALE PUMILUM, fl. yellow; 1ft.; August. *BIGELOVII*, fl. yellow, with brown disk; 4ft.; August and September. *STRIATUM*, deep orange, striped and blotched crimson; 3ft.; August and September.

Helianthus

GIGANTEUS, bright yellow fl.; 5ft. to 7ft.; August and September. *MULTIFLORUS BOUQUET D'OR*, fl. very double, rich golden-yellow; 4ft. *RIGIDUS GRANDIFLORUS*, golden-yellow, with dark brown centre; 4ft.; July and August. *R. MISS MELLISH*, large duplex fl., bright orange-yellow; 4ft.; August and September. *R. SEMI-PLEONUS*, handsome golden-yellow, semi-double fl.; 4ft.; September and October.

Helonias

LATTIFOLIA, suitable for damp situations; handsome purple fl.; 1½ ft.; June and July.

Heuchera

AMERICANA, fl. reddish; 1½ ft. *GLABRA*, fl. white or pink; 1ft.; June and July. *MICRANTHA*, fl. cream-coloured; 2ft.

Hieracium

AURANTIACUM, heads or deep orange-coloured fl.; 1½ ft.; May to August. *VILLOSUM*, fl. golden-yellow; 1. downy; 1ft.

Inula

ENSIFOLIA, fl. yellow; 1½ ft.; July and August. *GRANDIFLORA*, bold massive 1.; handsome yellow fl.; 2ft. *MONTANA*, fl. yellow; 1½ ft.; August.

Linum

FLAVUM, fl. yellow; 1ft.; June to August. *NARBONENSE*, drooping habit; mass of sky-blue fl.; 1ft.; June to August.

Lupinus

ARBOREUS, terminal racemes of fragrant bright yellow fl.; 3ft.; June to August. *POLYPHYLLUS ALBUS*, fl. white. *P. PURPLE KING*, fl. rich purple; 3ft.

Mertensia

PULMONARIOIDES (VIRGINICA), Gentian-blue fl. in long arching cymes; 1½ ft.; May and June. *SIBIRICA*, fl. light blue; 1½ ft.; May. *S. ALBA*, fl. white.

Enothera

FRUTICOSA YOUNGEI, masses of yellow fl.; 1ft.; June to August. *F. Y. FLORE PLENO*, fl. yellow, semi-double; 2ft. *ODORATA*, fl. yellow; 2ft.; June and July. *VENUSTA*, fl. golden-yellow; 1½ ft.

Orobus

LATHYROIDES, racemes of blue Pea-shaped fl.; 1½ ft.; June. *MULTIFLORUS*, fl. purple; 2ft.; July. *NIGER*, fl. dark purple; 3ft.; June. *TUBEROSUS*, fl. purple; 1ft.; June and July. *VERNUS ROSEUS*, fl. rose; 1ft.

Ostrowskia

MAGNIFICA, 3ft.; fl. at first pendulous, afterwards becoming erect, large, bell-shaped, and varying from lilac to dark purple in colour.

Paeony

CANDIDISSIMA, primrose-yellow, with white guard petals, rose-scented. *CAROLINE ALLAIN*, blush-pink. *DELICATISSIMA*, flesh passing to blushing-white. *DUKE OF WELLINGTON*, yellow, with white guard petals. *ELEGANS*, pink fl. *LADY LEONORA BRAMWELL*, soft rose, large double fl. *MADAME BREON*, peach-blossom colour, large and handsome. *MADAME DE GALHAU*, beautiful soft pink. *MIKADO*, large rose guard petals, central florets pink.

Paeony (contd.)

edged with gold. SNOWBALL, large snow-white flowers. SOLFATERRE, primrose-yel. passing to pure white.

Pentstemon

CHARLES NORMAND, light rosy-purple. EMILE DESCHANEL, brilliant sc. EMPEROR, rich cr., with white throat pencilled with red. JULES SANDEAU, rich rose-cr., white throat, pencilled rose. MADAME A. STERLING, bright cr., with white throat. MRS. F. GORDON, bright rose, with white throat. NEWBURY GEM, deep rich cr. PRESIDENT CARNOT, large purple flowers, white throat. WILLIAM ROBINSON, rosy-sc., with white throat.

Potentilla

CALIFORNIE, large golden-yel. fl. CENDRILLON, dark red; 2ft. CHROMATELLA, clear yel. FEU FOLLET, orange-sc., broad orange margin. L'ACHFKON, velvety-ed and yel. LOUIS VAN HOUTTE, very deep cr. MONT D'OR, large yel. ORPHEE, beautiful self-yel. VERSICOLOR, cr.-sc., shaded orange. VERVIANUM, reddish-yel. WILLIAM RULLIISON, glowing sc., suffused with orange.

Pyrethrum

ALFRED KELWAY, rich cr. APHRODITE, large pure white fl. BEATRICE KELWAY, cherry-rose fl. CELIA, very bright pink. CLEMENCE, deep rich cr. EMPRESS QUEEN, blu-h; fine broad petalled variety. EVELYN, bright pink. FIGARO, rich cr. FLORENTINE, blush-white. LEONARD KELWAY, soft rose. MAGICIAN, bright pink tipped with gold. MELTON, bright cr.-sc. METEOR, cr.-sc. tipped with white, MR. SANTLEY, bright cr. ORMONDE, bright rich rose. PETER BARK, glowing cr. QUEEN SOPHIA, flesh colour.

Ranunculus

ACONITIFOLIUS FLORE-PLENO, pure white small dbl. fl.; 1½ ft.; May and June. ACERIS FLORE-PLENO, yel.; 2½ ft.; June and July. AMPLEXICAULIS, large pure white; 1ft.; April and May. ASIATICUS, fl. yellowish; 9in.; May and June. GRAMINEUS, fl. yel.; l. blue-grey; 1ft.; April to June. MONSPeliacus, large yel. fl.; 1ft.; April and May.

Rudbeckia

AUTUMN GLORY, fl. rich yel., with deep bronze central cone; 5ft.; September and October. GOLDEN GLOW, fl. double, bright yel.; 5ft. LACINIATA GRANDIFLORA, large clear yel. fl.; 5ft.; August and September. PURPUREA, reddish-purple; 4ft.; September.

Salvia

GRANDIFLORA, fl. blue; 2ft.; July and August. PRATENSIS, bright violet; 2ft.; June to August. P. ROSEA, fl. rose-coloured; 2ft. VERBENACA, fl. violet; 1½ ft. to 2ft.; July and August.

Scabiosa

CAUCASICA, lilac-blue; 1½ ft.; June to September. C. ALBA, pure white fl. COLUMBARIA LATIFOLIA, fl. rose-lilac; 3ft. GRAMINIFOLIA, fl. pale lilac; 1ft. to 1½ ft.; June to September. LUTEA, light yel.; 3ft.; July to September. OCHROLEUCA, fl. sulphur-yel.; 2ft.; July to September.

Silphium

LACINIATUM, fl. yel.; 3ft.; July. PERfoliatum, large l.; bright yel. fl.; 4ft.; June to September. SCABERINUM, fl. yel.; 4ft.; August to October. TRIFOLIATUM, fl. bright yel.; 4ft.; August and September.

Thalictrum

ANGUSTIFOLIUM, fl. pale yel.; 3ft.; June. AQUILEGIFOLIUM ALBUM, fl. white; 4ft. A. PURPUREUM, fl. purple. FLAVUM, fine-cut l.; yel. fl.; 4ft.; July and August. MINUS AFFINE, fl. pale yel.; 1ft.; June and July.

Valeriana

OFFICINALIS, fl. pink; 3ft.; June. PHO AUREA, young l. bright golden-yel.; white fl.; 2ft.; August.

Veratrum

ALBUM, massive l.; white fl.; 3ft.; June and July. A. LOBELIANUM, fl. greenish-white; 4ft.; June to August. MAACKII, fl. dark purple; 2ft. NIGRUM, blackish-purple fl.; 2ft. to 3ft.; June to August. VIRIDE, fl. greenish; 4ft.; June to August.

CHAPTER V.

ROCK PLANTS.

Site — Construction of a Rock Garden — Difficulties in Cultivation — After-Management — Methods of Raising — Selected List of Species and Varieties.

TYPICAL rock plants are such as are found in the mountainous regions of the earth, and these are invariably subjects of dwarf stature ; the plants now grown in rock gardens, however, include not only those above mentioned, but also dwarf species coming from much lower elevations. At the present day the beauty of this very interesting and popular class of plants is too well known to need comment.

Although numerous alpines may be grown in the open border without a particle of rock near them, yet they succeed much better in the rock garden ; whilst for the cultivation of the rarer kinds a well-constructed rockery is absolutely essential, and the effect of such a one tastefully arranged is delightful in garden scenery.

In choosing a site it must be borne in mind that a free, airy, somewhat-elevated position is best, as many alpines, and especially the rarer kinds, are difficult to keep through the winter on level, wet soils. The site and extent will, however, depend largely on the surroundings and on the number of plants intended to be grown. If an elevated position cannot be obtained, and the rock garden has to be formed in a more or

less flat situation, it is best done by cutting a path through the middle of the intended rockery, throwing the soil up on each side so as to form mounds and depressions. When the rough outline has thus been formed, and the bulk of the soil placed in position, it must be left for several weeks to solidify before the rockwork is used. The quality of this foundation soil is immaterial so long as it is sufficiently porous to allow of the free passage of water through it; nevertheless, if this soil is good, so much the better for the plants, as many of them are deep-rooting subjects, and their roots will descend beyond the prepared soil placed in the crevices between the rocks.

Natural stone is to be preferred when it can be procured, and the kind used will depend upon that found in the neighbourhood, as it will be expensive to convey it from a distance. If limestone is obtainable, it should be used, as this gives a very artistic appearance to the rock garden. In some districts it is impossible to obtain natural stone of any description, and when this is the case the use of artificial stone has to be resorted to. This may be made as rough as possible out of brick-rubble and concrete. Carved stones of all kinds should be avoided. The object of the rock is to assist in keeping the roots moist, to help in their healthy development, to prevent undue evaporation from the soil, to form the framework of the rockery, and at the same time to provide picturesque growing sites for the plants.

In making rock gardens, and in disposing of the rocks, it is usual to imitate Nature, but it must be borne in mind that the plants are, or ought to be, the first consideration, and suitable positions must be formed for their reception. The rocks should stand out boldly here and there so as to give variation to the scene, as well as to provide various aspects for the plants. In arranging steep rockwork each piece of stone should slightly recede from the one below it, so that the rain falling on the face of the rocks may find its way into the intervening fissures, and thus supply the roots of the plants wit' moisture. These fissures must be filled with soil when the rockwork is being built up, so that the plants may have an abundance of soil in which to grow. In arranging ordinary rockwork, pockets and crevices should be left of sufficient size to admit of plenty of soil, and these should be filled with the kind suitable for the particular plants intended to be grown therein. Some alpines, including the rarer ones, delight in narrow crevices, but in all

cases the soil in these crevices, or fissures, should be in connection with the bulk underneath, so that the roots may descend to any depth. Vertical crevices should always be narrower at the bottom than at the top, so that when the soil settles down it will fall against the sides of the rocks without leaving hollows.

A few alpines, such as the thick, fleshy-leaved *Sempervivums*, will hold on almost to the bare rock and grow with very little soil, but these are the exception : the majority prefer a deep-rooting medium, so that the roots may run down by the sides of the rocks to a good depth ; they are thereby kept cool and moist, and are better able to withstand the occasional droughts experienced during our variable summers. Many of them are not fastidious as to soil, and a good turfey loam intermixed with plenty of smashed sandstone to keep it porous will be found suitable for the majority of kinds. Of course those requiring special mixtures can easily be supplied by filling up the spaces set apart for them with the kind of soil needed, instead of with the ordinary soil.

Great difficulty is often experienced in keeping through the winter plants which have their leaves covered with "down," such as the silky-leaved *Androsaces*, for the water collects in the down and rots them away. With such subjects it is a good plan to plant them so as to be overhung by ledges of rock ; or they might be planted in a dry, airy situation, and have squares of glass elevated over them during the winter, so as to keep off the rain. The majority of alpines prefer a position fully exposed to the sun ; such situations suit the rare and minute species, whilst a stony surface is also beneficial, for the particles of stone prevent excessive evaporation and tend to keep the roots cool and moist. A well-constructed rockery should provide all aspects, so that both sun- and shade-loving plants may be accommodated. A knowledge of the various plants and their requirements is essential before suitable positions can be chosen for them. A great point is to insert each firmly and right up to the collar of the plant.

When once planted, the after-management is simple enough, and consists mainly in keeping free from weeds, in preventing the strong-growing kinds from overrunning and smothering the weaker and more diminutive ones, and in giving them an abundance of water during hot dry weather in the summer. Slugs and mice must also be trapped, or many of the delicate little alpines will soon disappear. Plants which raise their collars will require top-dressing or replanting annually or they will soon become leggy, as is the case with many of the *Primulas*.

The methods of raising alpines are the same as those practised in raising hardy herbaceous perennials, and are mentioned under that heading. The following is a good selection :

ACANTHOLIMON GLUMACEUM (*Statice Ararati*) grows from 3in. to 6in. high, and bears six to eight rose-coloured flowers in a head much after the fashion of the Thrift (Sea Pink). It is of tufted habit, forming cushions of dark green prickly foliage.

ACHILLEA RUPESTRIS forms cushions of evergreen foliage, and from June to September produces heads of pure white flowers on stems 6in. high. *A. tomentosa* (Fig. 96) is an attractive plant, growing from 6in. to 12in. high, and having flat heads of bright yellow flowers. *A. umbellata* is a fine rock plant, 6in. high, having silvery foliage and heads of white flowers.



FIG. 96.—*ACHILLEA
TOMENTOSA*.

a mass of Fennel-like foliage. The flowers resemble those of the Anemone. They are upwards of 2in. across, of a beautiful yellow colour, and are borne in June and July. *A. vernalis* is a handsome plant, growing from 8in. to 12in. high, and bearing large yellow flowers during March and April.

ALYSSUM.—*A. saxatile compactum* is a showy rockery plant, yielding golden-yellow flowers in spring. It grows about 6in. high.

ANDROSACES are small, interesting alpines, suitable for either rockwork or pot culture. The woolly-leaved species must be protected from the rain during winter. Propagation is effected by seeds or division. *A. carnea* forms dense tufts 3in. to 4in. high, covered with clusters of pink or rose-coloured flowers with yellow eyes. *A. lanuginosa* has greyish foliage on trailing stems, and is a suitable subject for planting so that the shoots may hang over the face of the rockwork. This has also umbels of rose-coloured flowers with yellow centres, borne during the months of July and August. *A. sarmentosa* is one of the most beautiful of the genus, producing rosettes of downy foliage, and large umbels of rose-coloured flowers with white eyes. It grows about 6in. high, and flowers during May and June. A position in a chink of the rockwork and a sandy loam suit it admirably.

ARABIS.—*A. albida* is a compact plant, 9in. high, with pure white flowers. There are also a double-flowered and a variegated form. *A. procurrens* is a smaller plant (3in.), also with white flowers, and a variegated variety.

ARENARIA BALEARICA is a handsome, close-growing species, suitable for creeping over damp stones. It has dark green foliage, and in May and June, when covered with its small white star-like flowers, is very attractive. *A. graminifolia* grows about 6in. high, and forms grass-like patches, covered during June and July with small white flowers.

ASTER ALPINUS is a dwarf species, growing 9in. high, and flowering in June and July. The flowers, which are useful for cutting, are upwards of 2in. across. There are many colour-varieties, white, rose, and blue of shades.

AUBRIETIAS.—There are a number of these in cultivation, but principally varieties of *A. deltoidea*, like *Campbellii*, *græca*, *grandiflora*, *Hendersoni*, *Leichtlinii*, *Leichtlinii rosea*, *olympica*, *purpurea*, and *violacea*. All are sun-lovers, and flower in spring. They vary in colour from blue, violet, and purple to rose-red. Associated with Alyssum and Arabis they present a fine colour-picture when massed.

CAMPANULA CARPATICA is suitable either for the rock garden or for the mixed border, it grows 1ft. high, and produces numerous light blue flowers from May to August. Its variety *alba* has pure white flowers. *C. turbinata*, a plant growing about 6in. high, has large purplish-blue flowers, while its variety *alba* has white ones. *C. garganica* produces masses of blue flowers with white centres, and is only 4in. high. G. F. Wilson is a hybrid growing only 3in. high, and bearing numerous dark blue salver-shaped flowers from June to August. *C. pulla* is an excellent rock plant, only 3in. high, and bearing deep purple drooping flowers from May to July. *C. pusilla* grows 6in. high, and produces its pale blue flowers in abundance from May to September. The variety *alba* is also grown. *C. fragilis* is frequently employed with excellent effect upon the rockery. The flowers are clear violet-purple, and from 3in. to 4in. high. Many of these dwarfer Campanulas are amongst the finest of subjects for hanging-baskets—*C. fragilis*, *C. carpatica*, and its white variety, for instance.

CERASTIUM TOMENTOSUM (Snow in Summer) is but 3in. high, and has white flowers and elegant silvery-white foliage. Other good rock plants are *C. Biebersteinii*, larger than the preceding, and *C. arvense grandiflorum*, 6in., with snowy-white flowers.

CORYDALIS is a genus of early-flowering plants, suitable either for the rockery or for the open border. They are of easy culture, and may be increased by seeds or division. *C. capnoides* is a plant growing from 12in. to 18in. high, and bearing white

flowers with yellow markings during July. *C. Kolpakowskyana* grows about 6in. high, and yields its pink or purple flowers with long spurs during April. *C. lutea* is an excellent species for dry situations; it reaches a height of 1ft., and bears a profusion of yellow flowers during May and June. *C. nobilis* grows about 1ft. high, and in May produces masses of yellow flowers with long spurs; it prefers a moist, shady situation.

DIANTHUS (the Pink genus) contains several perennials which are very ornamental rock-garden as well as border-plants. They are increased by seeds, cuttings (known as pipings), and layers. *D. alpinus* is a charming little alpine, with dark green foliage, and large crimson flowers 1in. across; it grows only about 4in. high, and flowers in June and July. *D. casius* (*D. pulchellus*), the Cheddar Pink, is a plant with glaucous foliage and rosy-pink flowers; it grows from 3in. to 6in. high, and is generally in blossom during May and June. *D. plumarius* (Common Pink) grows 1ft. high, and during June and July bears numerous white or pink sweet-scented flowers, fringed at the margin; it is from this plant that our garden Pinks have sprung. Other dwarf species suitable for the rock garden are *D. glacialis* and *D. petraeus*, with rose-coloured, and *D. neglectus*, with pink flowers.

DRABAS are charming spring-flowering plants suitable for the rockery. *D. aizoides* is a pretty alpine,



FIG. 97.—DRABA MAWII.

first white, but afterwards change to a soft rose-colour.

DRYAS OCTOPETALA is a beautiful alpine, with small, Oak-like leaves and large, white, solitary flowers, each with eight petals; it grows only about 3in. high, and flowers in May and June.

forming compact tufts 3in. high, and producing bright yellow flowers during March and April. *D. bruniaefolia* forms dense, moss-like tufts from 2in. to 4in. high; it also has yellow flowers, produced about June. *D. Mawii* (Fig. 97) is a dwarf rock plant, forming dense tufts of foliage, and bearing an abundance of pure white flowers in spring. *D. pyrenaica* is a gem, growing 3in. high; the flowers, which are borne in May, are

EDELWEISS.—See *Leontopodium alpinum*.

EPILOBIUM OBCORDATUM is an alpine species suitable for a moist position in the rockery; it grows about 4in. high, and from May to July produces an abundance of bright rose-coloured flowers upwards of 1in. in diameter.

EPIMEDIUMS are useful plants for shady positions, and they thrive best in a light peat soil. *E. alpinum* grows upwards of 1ft. high, and flowers in May and June. The outer sepals are greyish, the inner ones crimson, whilst the petals are of a yellow colour; several flowers are borne on the same stem in a loose panicle.

ERINUS ALPINUS is a charming little alpine, suitable for dry places in the rockery, whilst it also grows well on old walls. It forms compact cushions 3in.

high, covered during May and June with rose or purple flowers.

ERYSIMUM PULCHELLUM is a fine plant for a sunny position. It grows from 6in. to 12in. high, and blossoms during May and June. The flowers are of a lemon-yellow colour, and produced in great abundance.

ERYTHRÆA DIFFUSA grows 3in. high, and bears bright rose-coloured flowers during June and July.

GALAX APHYLLA (*Blandfordia cordata*) is a neat little plant (Fig. 98), delighting in a moist, sandy, peat soil. It is an evergreen, with round, notched leaves, which in the autumn assume a reddish hue.

The flower-stems rise to a height of 9in., and bear numerous small white flowers in July. It is propagated by division.

GENTIANAS are lovely plants for the rockery; the dwarf kinds are sometimes used as edging plants, but, unfortunately, in many localities they are very shy at flowering. Propagation is effected by carefully-made divisions; plants may also be raised from seed, but it is a very slow process, especially if the seed is old. *G. acaulis*, the Gentianella, forms cushions of glossy-green

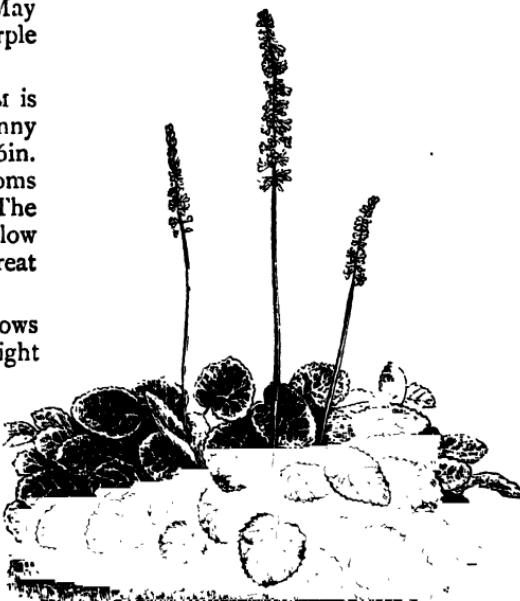


FIG. 98.—GALAX APHYLLA.

foliage, and bears erect bell-shaped flowers with yellow marks inside ; it grows from 3in. to 6in. high, and flowers between March and June. *G. asclepiadea* grows 18in. high, and produces long terminal clusters of purplish-blue flowers during July and August. It succeeds in a moist, shady situation of either the rockery or the open border. A white variety of this is also cultivated. *G. verna* is a gem, and in districts where it does well, forms dense tufts of glistening green foliage, covered with flowers of a brilliant blue colour. It grows only 3in. high, and flowers in April and May.

GEUM MONTANUM is an excellent rock plant, growing from 6in. to 15in. high, and producing an abundance of golden-yellow flowers from June to August.

GNAPHALIUM LEONTOPODIUM.—See *Leontopodium alpinum*.

GYPSOPHILA CERASTOIDES is a dwarf, though handsome, rock plant, growing from 3in. to 6in. high, and flowering during May and June ; the flowers are white, veined with pink. Propagated by seeds, cuttings, or division.

IBERIS (*Candytuft*).—Many species of this well-known genus are useful rock plants—*I. sempervirens*, *I. s. Garrexiana*, *I. gibraltarica*, *I. g. hybrida*, and *I. saxatilis*. Then there are garden forms like Snow Queen, Little Gem, Perfection, and others. All are white or whitish as to flower, under 1ft. in height, and produce their blossoms in either late spring or early summer.

LEONTOPODIUM ALPINUM (*Gnaphalium Leontopodium*), the Edelweiss, is a remarkable alpine, growing 6in. high, and producing terminal heads of flowers enveloped in white, woolly bracts (Fig. 99) in June and July. It should be planted in sandy, stony soil, in exposed positions. Propagation is effected by seeds or by careful division of the old plants.

LINARIA ALPINA is a charming little rock plant of neat, trailing habit, growing from 3in. to 6in. high, and flowering from June to September. The flowers are of a purple colour, with orange centres.



FIG. 99.—LEONTOPODIUM ALPINUM.

LINUM FLAVUM is a handsome plant, of neat habit, growing from 12in. to 18in. high, and bearing an abundance of showy yellow flowers from June to August.

LITHOSPERMUMS are showy rockwork plants. They prefer a light, sandy loam, and are easily increased by either seeds, cuttings, or division. *L. Gastoni* is a rare plant from the Pyrenees, and now said to be scarce in its native habitat. It varies in height from 9in. to 18in., and is somewhat shrubby in habit. During June and July it produces spikes of bright blue flowers. *L. graminifolium* is a choice alpine, growing from 6in. to 12in. high, and bearing clusters of rich blue flowers. *L. prostratum* is a showy evergreen plant of dwarf habit, producing numerous prostrate stems. It is essentially a rock-garden subject, yet does fairly well in the open border. It has flowers of a deep blue Gentian-like hue, but with red or violet stripes. The best way to propagate it is by cuttings, placed in sandy peat in a cool frame, in the autumn.

LYCHNIS ALPINA (Fig. 100) is a charming plant, growing 6in. high, and yielding clusters of rose-coloured flowers during May and June.

L. Lagascae grows only 3in. high, and bears large bright rose-coloured flowers with white centres. It flowers from June to August.

MECONOPSIS CAMBRICA, the pretty Welsh Poppy, is a desirable plant for the rock garden; it grows 1ft. in height, and bears bright yellow flowers on long stems from June to August. It is easily grown from seed, and very often establishes itself on old walls. Unlike the Himalayan species, it prefers a dry situation.

MEGASEA.—*Saxifraga.*

MERTENSIA ALPINA is a lovely alpine, growing from 6in. to 9in. high, and bearing clusters of light blue flowers. *M. sibirica* is a handsome free-flowering plant, growing from 12in. to 18in. high, and producing its purplish-blue flowers from May to July. The variety *alba* has pendent clusters of white flowers.

MORISIA HYPOGAEA is a dwarf Sardinian alpine about which much has lately been written. It grows only 3in. high, and for



FIG. 100.—LYCHNIS ALPINA.

several weeks in the early summer is covered with clear bright yellow flowers ; these are produced singly on short stalks, and are much enhanced by the dark, finely-cut foliage. It is an excellent subject for a sunny position in the rockery, and delights in a good sandy loam. Increased by seeds sown when ripe, or by division.

MYSOSOTIS (Forget-me-not) is a genus containing several well-known perennials suitable for the rock garden or for spring bedding. They delight in moist, shady positions. Propagated by seeds, by cuttings, or by division. *M. alpestris* (*M. rupicola*), the alpine Forget-me-not, is an attractive little plant, growing from 2in. to 6in. high, and covered during summer with deep blue flowers having yellow eyes. *M. dissitiflora* is excellent for spring bedding. *M. semperflorens* grows 1ft. high, and during summer and autumn is covered with rich blue flowers. *M. sylvatica* is a profuse spring and early summer flowering species, growing from 12in. to 18in. high, and bearing pretty blue flowers with yellow throats. *M. cæspitosa Reichsteineri* is a very choice rock plant, only 3in. high, with pretty blue flowers. A shade-lover.

OENOTHERA MISSOURIENSIS LATIFOLIA, known also as *O. macrocarpa*, is a showy plant growing about 9in. high, and

bearing large yellow flowers, on red trailing stems, from June to September.

OMPHALODES Verna is a spring-flowering plant, somewhat resembling a Forget-me-not ; it grows 6in. high, and bears loose racemes of small brilliant blue flowers. It is a fine plant for a shaded position in the rockery, and is also suitable for naturalising in the wild garden ; when once established it soon forms a dense tuft, and increases rapidly by means of runners. A white variety is also in cultivation, which, like the type, flowers from March to June.



FIG. 101.—*ONOSMA ECHIOIDES*.

(Fig. 101), known also as *O. tauricum*, is a charming evergreen, bearing clusters of drooping tubular flowers, on arching stems

ONOSMA ECHIOIDES

1ft. high; the flowers are bright yellow, very fragrant, and are produced from May to August.

PHLOX is a genus yielding several dwarf perennial species suitable for the rock garden, such as *P. amara* and *P. subulata*.

The former has bright pink, and the latter pinkish flowers. The latter is very free as to flower.



FIG. 102.—PHYTEUMA CHARMELII.

P. Charmelii (Fig. 102), also has blue flowers, in round heads, and is an excellent plant for a well-drained position on the rockery.

PRIMULA is an extensive genus of alpine perennials, containing many species suitable for rock-garden culture. Propagation is usually effected by seeds, though sometimes the old plants may be carefully divided. *P. cortusoides* produces umbels of rose-coloured flowers during May; the scapes are 9in. high. *P. denticulata* is a handsome species, thriving well in a light moist soil. The leaves are covered underneath with a white mealy substance; the flowers are lilac, and are produced in large globular heads on scapes upwards of 12in. high. Its variety *cashmeriana* is a splendid form, having violet-purple flowers with yellow eyes. *P. floribunda* has small golden-yellow flowers produced



FIG. 103.—PRIMULA MARGINATA.

in whorls ; the scapes reach a height of from 6in. to 8in. *P. japonica*, the Japanese Primrose, is a well-known and ornamental species, with massive whorls of rose-coloured flowers produced during spring on scapes varying from 12in. to 18in. high. It prefers damp and shady places, in which, if planted in good rich loam, it will make vigorous growth. *P. marginata* (Fig. 103) has bluish-lilac flowers with mealy centres ; it grows about 3in. high, and flowers during April and May. *P. rosea* is a charming plant for moist situations ; in early spring it produces numerous scapes from 4in. to 6in. high, each terminating in a head of bright rose-coloured flowers having yellow eyes. *P. sikkimensis* also delights in damp, shady situations ; it sends up strong scapes from 1ft. to 2ft. high, each bearing a large umbel of fragrant, drooping, pale yellow flowers.

PRUNELLA GRANDIFLORA grows from 6in. to 12in. high, and bears violet-purple flowers in dense terminal spikes during July and August. It thrives in any good light soil, and is suitable

either for the rockery or for the front of borders. It may easily be increased by division of the old plants.

RAMONDIA PYRENAICA is a charming little alpine suitable for damp, shady nooks between the rocks ; it prefers a sharp, peaty soil. The leaves are borne in rosettes, and lie close to the soil ; they are dark green, crimped, and covered with reddish-brown hairs. The flower-stalks grow 5in. or 6in. high, and each usually bears two or three violet-purple flowers with yellow eyes during May and June. There is also a white variety known as *alba*, which is a handsome plant, though somewhat rare. Increased by seed or by division.



FIG. 104.—SAXIFRAGA COTYLEDON.

garden culture. Increased by offsets or division. The numerous species may be roughly divided into five sections, viz. :

(1) *The Encrusted Section*, comprising plants with rosettes of silvery-tufted foliage. To this section belongs *S. Cotyledon* (Fig. 104), a large silvery-leaved kind, sending up a branched

SAXIFRAGA is a large genus of interesting and ornamental perennials adapted for rock-garden culture.

pyramidal flower stem, 1ft. to 2ft. high, and covered from May to July with large white flowers. *S. longifolia* has large rosettes of silvery leaves, 6in. long, and bears white flowers, dotted with red, on much-branched flower-stems 1ft. high. *S. pyramidalis* is merely a robust variety of *S. Cotyledon*.

(2) *The Mossy Section* contains the dense, moss- or cushion-like Saxifrages; of these *S. hypnoides* and *S. muscoides* are examples. The former bears small white flowers, on stems 6in. to 12in. long, from May to July; the latter, known also as *S. moschata*, bears racemes of pale yellow or purple flowers during May and June.

(3) *The Oppositifolia Section* comprises those with small opposite leaves. The typical plant, *S. oppositifolia*, has leafy, creeping stems, 6in. to 8in. long, and produces solitary bright purple flowers during April and May. Its variety *pyrenaica* also has purple flowers, and is an excellent rock-garden plant. Several other varieties are also grown.

(4) *The Round-leaved Section* includes such kinds as *S. sarmentosa*, *S. umbrosa*, and *S. rotundifolia*. The first, however, is only half-hardy. *S. umbrosa* (London Pride) is a well-known plant, sending up a leafless flower-stalk 6in. to 12in. high; the flowers, which are borne in a panicled cyme, are white, but often spotted with red. *S. rotundifolia* has white flowers marked with scarlet dots.

(5) *The Large-leaved Section* comprises the species with large leaves, commonly known in gardens as Megaseas. Of these the following are best known: *S. cordifolia* (*Megasea cordifolia*), with large cordate leaves and clusters of bright rose-coloured flowers; it grows 1ft. high, and flowers from March to May. *S. crassifolia* has large oval leaves, which are fleshy and shining; in April and May it bears clusters of reddish flowers on stalks 1ft. in height. *S. (Megasea) purpurascens* has large, smooth, purple leaves; the flower-stems are 12in. high, and are surmounted with clusters of bright purple flowers in June. *S. Stracheyi* has large shining green leaves, and lovely pink flowers upwards of 1in. across, produced in March and April on stems 9in. high.

SEDUMS (Stonecrops) are essentially rock-garden plants, and also succeed well on old walls, ruins, &c. Some, such as *S. glaucum* and *S. lydium*, are also useful for carpet-bedding. They thrive in almost any position, and are easily increased either by seeds, by cuttings, or by division. *S. acre*, although a British plant, is much grown; it sends out numerous barren, creeping shoots, from which rise dwarf erect branches bearing yellow flowers; its variety *aureum* has the tips of the leaves of a bright golden-yellow during the spring. *S. album* grows 6in. high, and produces its cymes of white flowers on pinkish stems during June and July. *S. glaucum* grows from 3in. to 4in. high, and bears cymes of white flowers. *S. kamtschaticum* has prostrate

stems, 6in. to 8in. long, of a greenish or purplish colour; the flower-stems are erect, from 4in. to 6in. high, and bear cymes of yellow flowers. *S. lydium* produces white flowers in June and July; the flowering stems are from 4in. to 5in. long, and the barren ones from 2in. to 3in. *S. spectabile* is a tall-growing species, from 12in. to 18in. high, suitable either for the rockery or for the mixed border; it bears flat-topped cymes of pinkish flowers during September.

SEMPERVIVUM (House Leeks) comprise a number of interesting rockery plants, very varied in form and flower; they delight in a dry, sandy soil, and are easily propagated by offsets taken from the old plants.

S. arachnoideum bears upwards of fifty succulent leaves in a rosette, the tips of which are connected by long white hairs; the flowering-stems are from 3in. to 4in. long, leafy, and bear several pink flowers upwards of 1in. in diameter.

The variety *Laggeri* (Fig. 105) is a robust form of the above, producing large rosettes of leaves.

S. fimbriatum has fifty to sixty leaves in a rosette, the outer ones turning green; the flower-stem rises from 6in. to 9in. high, and bears bright red or purple flowers in July and August.

S. montanum has from



FIG. 105.—SEMPERVIVUM ARACHNOIDEUM
LAGGERI.

sixty to eighty leaves closely packed in a rosette; the flower-stems are about 6in. high, and bear crimson flowers in June.

SHORTIA GALACIFOLIA is a beautiful plant for the rock garden. It grows from 3in. to 5in. high, and flowers during March and April. The flowers are large, solitary, and somewhat bell-shaped; the petals are fimbriated at the edge, are first white, but as they grow older they become tinged with red. The leaves are evergreen, long-stalked, and roundish; at first they are deep green, but in late summer they assume a beautiful bronzy-crimson hue.

SILENE is an extensive genus of annual, biennial, and perennial plants, some of which are natives of Britain. The perennials are propagated either by seeds, cuttings, or by division; they may be grown in the rockery or in the mixed border. *S. acaulis*, the Cushion Pink, forms moss-like tufts of foliage, 2in. high, and covered with numerous pink flowers from June to August. *S. alpestris* is a neat little alpine growing from 3in. to 6in. high, and producing, during May and June, a sheet of glistening white flowers. *S. maritima flore-pleno* is a fine rock plant, growing 6in. high, and forming prostrate tufts of glaucous foliage. It has double white flowers, as large as those of the garden Pinks, and produced in abundance from May to August. *S. Schaffta* forms a compact bushy tuft, 6in. high, and bears numerous rose-coloured flowers during July and August.

SOLDANELLAS are pretty alpines, thriving best in a peaty soil in sheltered corners of the rockery. They may be increased by seeds or by division. *S. alpina*, the Blue Moonwort, grows 6in. high, and bears beautifully-fringed pendent bell-shaped flowers during April; they are of a deep purple or violet colour, and borne three or four together on each scape; the leaves are small, and round or kidney-shaped. *S. minima* has large fringed blue flowers, borne singly on scapes 2in. or 3in. high during April and May. *S. montana* grows 3in. high, and produces its purple flowers, two to four on each scape, during April.

STATICE is a genus of ornamental plants, many of which are suitable either for the rockery or for the mixed border; they produce large heads of flowers which are very lasting both on the plant and when cut. *S. spathulata* bears heads of purple flowers during August, on stems 1ft. high. *S. tatarica* produces numerous pink flowers on a long, broad panicle 1ft. high, during July and August; the leaves are radical, and from 4in. to 6in. long.



FIG. 106.—*TIARELLA CORDIFOLIA*.

SYMPHYANDRA WANNERI, although a biennial, is a useful rock-garden plant, having showy Campanula-like blue flowers. It grows from 6in. to 12in. high, and is a native of the Alps. It is sometimes known as *Campanula Wanneri*.

TIARELLA CORDIFOLIA (Fig. 106) is a charming plant for the rock garden or the front of the mixed border; it has creeping stems, and forms dense masses of delicate foliage, green at first, but afterwards assuming a brownish tint. The stems rise from 6in. to 12in. high, and during May and June bear numerous small, Spiraea-like flowers which, when fully expanded, are of a creamy-white colour, but in the bud state are delicately tinged with pink. It may be propagated by division.

VERONICA TEUCRIUM (Hungarian Speedwell) bears many-flowered racemes of light blue flowers in July. The stems are from 9in. to 12in. long, and form a dense, spreading mass. Its variety *dubia*, known also as *V. prostrata*, is one of the showiest of the dwarf herbaceous kinds, and when in flower forms an effective rockery plant. It is of prostrate habit, forming dense tufts, covered during May and June with bright blue flowers.

WAHLENBERGIA TENUIFOLIA is a hardy rock plant, growing from 3in. to 6in. high, and flowering during June and July. The leaves are rather long and narrow; the flowers are violet-purple, white at the base, and are borne from six to ten together in a terminal tuft.

The following are additional species and varieties of merit:

Acaena

ARGENTEA, fl. brown; 6in.; June to August. **MYRIOPHYLLA**, bright green fern-like l.; 6in. **PULCHELLA**, fl. inconspicuous; l. bronze; a creeping species.

ISOPHYLLA, trailing habit; bright blue fl.; 6in.; June to September. **PORTENSCHLAGIANA**, blue; 4in.; May to August. **P. MILA**, blue; 4in.; July. **P. ALBA**, pure white; 4in.

Ajuga

GENEVENSIS, flesh-coloured; 9in.; June to September. **G. BROCKBANKII**, fl. deep blue; June and July. **G. VARIEGATA**, beautifully-coloured l. **REPTANS**, blue; 6in.; May. **R. ATROPURPUREA**, l. dark purple; fl. blue. **R. VARIEGATA**, l. white variegated.

Cheiranthus

ALLIONI, fl. yel.; 9in.; May and June. **ALPINUS**, heads of fragrant pale yel. fl.; 1ft.; May to August. **A. MARSHALLI**, fl. orange-yel.; 6in. **HARPER CREWE** (*GOLDEN DROP*), fl. dbl. yel.; 9in. **MUTABILIS**, purple fl., changing to bronze, 1ft.

Androsace

FILIFORMIS, fl. white; 1ft.; May. **FOLIOSA**, heads of rose-coloured fl.; July. **LAGGERI**, fl. pink; March. **LANUGINOSA LEICHTLINI**, fl. rose.

Chrysanthemum

CATANANCHE, fl. heads yel.; 4in. to 6in. **CAUCASICUM**, small white Daisy-like fl.; 3in.

Campanula

ERINUS, pale blue starry fl. **FAGILLIS**, pale blue; 9in.; July and August.

Coronilla

CICA IBERICA, trailing; bright yel. Pea-shaped fl.; deep green l.

Crucianella

SYLOSA, neat trailing; pink fl.; 9in.; July to September. *S. BRILLIANT*, fl. rosy-crimson.

Cyananthus

INCANUS, fl. sky blue; 3in. to 4in.; August. *LOBATIS*, prefers a damp, peaty soil; large blue fl.; 6in.; August.

Dianthus

ARENARIUS, fl. white, with pink eye, fimbriated; 6in. *CRUENTUS*, fl. blood-red; 1ft. *DELTOIDES*, rose-coloured; 6in.; June and July. *D. ALBUS*, white fl.

Epimedium

MACRANTHUM, yel.; 1ft.; May and June. *MUSSCHIANUM*, fl. dull white; May. *NIVEUM*, small white fl.; 1ft. *N. ROSUM*, fl. rose-coloured. *PINNATUM*, fl. bright yel.; 1ft.; May and June.

Erigeron

GLAUCUS, blue fl.; 1ft.; July and August. *ROYLEI*, fl. lavender-blue; 6in. to 12in.; July.

Erodium

CHAMOMRYOIDES (*REICHARDI*), fl. white; 4in.; July. *HVMFNODES*, fl. white, veined pink; 9in.; July. *MACRAEUM*, fl. pale violet; 6in. to 12in.; June and July. *MANESCAVI*, fl. purplish-red; 1ft.; June to August.

Gentiana

ANDREWSTII, clusters of purplish-blue fl.; March to June. *CRUCIATA*, fl. dark blue; 6in.; June and July. *DECUMBENS*, fl. blue; 1ft.; June and July. *LUTEA*, suitable also for the border; whorls of yel. fl.; 3ft.; June and July. *TIBETICA*, fl. straw-coloured, in clusters; 1ft.; August.

Globularia

NANA, fl.-heads bluish, stem creeping. *TRICHOSANTHA*, olive-green l.; globular heads of blue fl.; 6in.; June and July. *VULGARIS*, fl. bright blue; 6in. to 12in.

Hacquetia

EPIPACTIS, bright yel. fl.; 3in. to 6in.; April and May.

Hutchinsia

ALPINA, corymbs of snow-white fl.; 3in.; April to June.

Jasione

PERENNIS, dwarf compact tufts, heads of light blue fl.; 1ft.

Lewisia

REDIVIVA, tufts of long narrow fleshy l.; fl. varying from rose to white; 2in. across, 3in. high; middle of summer.

Linnæa

BOREALIS, trailing evergreen; rose-coloured bell-shaped fragrant fl.; May and June.

Lysimachia

NUMMULARIA, trailing, yel. fl.; June to August. *N. AUREA*, golden l.

Mentha

REQUIENI, dense green carpet of very fragrant l.

Ourisia

COCCINEA, shady situation, clusters of drooping sc. fl.; 9in.; June and July.

Platycodon

GRANDIFLORUM, deep blue fl.; 1½ ft.; June to August. *G. ALBUM*, pearly-white fl. *G. MARIESII*, fl. deep blue; 1ft.; June to August.

Pratia

ANGULATA (*LOBELIA LITTORALIS*), dwarf trailing plant, with white fl.

Pulmonaria

MOLLIS, l. blotched and speckled with white; blue fl.; 9in.; May and June. *TUBEROSA*, fl. pink; 9in.; May.

Saponaria

OXYMOIDES, numerous rosy-cr. fl.; 6in.; July and August. *O. SPLENDISSIMA*, fl. deep rosy-crimson; 6in.

Saxifrage—Encrusted

AIZOON, white; 9in.; May and June. *CESIA*, resembling silvery moss, with pale yel. fl.; 6in.; May and June. *CRUSTATA*, white; 6in.; June. *LANTOSCANA SUPERBA*, panicles of large snow-white fl., spotted cr.; 1ft.; May and June. *MACNABIANA*, white, spotted cr.; 2ft.; June and July.

Saxifrage (contd.)—Mossy

CÆSPIOSA, cream; 6in.; April and May. *MAWEANA*, large pure white fl.; May.

— Oppositifolia

ALBA, pure white fl., creeping habit. *SPLENDENS*, sheets of rosy-cr. fl.

— Various

APICULATA, primrose-yel. fl. *BURSERIANA*, pure white fl. on sc. stems. *SANCTA*, rich golden-yel. fl.

Sedum

EWERSII, purplish-lilac; 4in.; June. *PALLIDUM*, blue-grey l., rosy-white fl. *RUPESTRE*, fl. deep yel., l. tinged with red; 4in.; June and July. *SEXANGULARE*, yel.; 6in.; July.

Sempervivum

CALIFORNICUM, green, tipped with brown. *FIMBRIATUM*, purple; 6in.; July and August. *POWELII* (cobweb variety), creamy-white; 6in.; June and July. *TRISTE*, dark red-bronze l.

Thymus

AZORICUS, fl. purple; 3in.; July. *CHAMÆDRYS MONTANUS*, fl. purplish. *C. M. ALBUS*, white; 4in.; June to August. *SERPYLLUM*, rosy-purple; 4in.; July. *S. ALBUS*, white fl. *S. COCCINEUS*, fl. brilliant crimson. *S. LANUGINOSUS*, light purple fl.; June to August.

Waldsteinia

GEOIDES, fl. yel.; 6in.; March to June. *TRIFOLIA*, bright yel. fl.; 6in.; May and June.

CHAPTER VI.

HARDY BULBS AND TUBERS.

**Antiquity of for Garden Decoration—Soil and Situation—Propagation
—When to Plant—Where to Plant—Naturalising—Pests—
Choice Species and Garden Varieties.**

FIRST to greet us in the spring, and the last to linger with us, giving to our gardens brightness even in the depth of winter, is it any wonder that bulbs and tubers, as ordinarily understood, appeal so strongly to hardy plant lovers? Indeed, having regard to the numerous claims that they have upon the gardener's attention, the wonder rather would be if they did not have such a hold. From the very earliest times bulbs, at any rate, have been viewed with favour, as witness the tender, nay, almost loving care that was lavished upon them by those gardeners of a bygone age like Parkinson. They were amongst the first plants that were utilised for the beautification of English gardens, and thus for their early associations, if for naught else, they are at least entitled to respect. Apart, however, from what may be termed the sentimental aspect of the question, they have claims, and just ones, upon the attention of every practical gardener: their chasteness, or it may be their gorgeousness of colouring, their ease of culture, their general adaptability, and, in the majority of cases, their permanence, entitle them to it.

To fully realise the important part they play, and their true decorative value, let us for a moment think of our gardens say, shorn on the one hand of those spring harbingers the Snow-drops, the Crocuses, the Scillas, the Snow Glories, the Snow-flakes, the Hyacinths, the Tulips, and the lesser known, though no less deserving Fritillaries; or on the other of the Anemones, the Winter Aconites, the Cyclamens, and several others. Under the most varying conditions of soil, situation, and temperature.

they clothe themselves in their gayest apparel. The ways in which they may be utilised are as numerous as the plants themselves. For beds and borders, the margins of streams, the choice parts of the rock garden, the shrubbery border, and the decoration of window-boxes, they are equally well adapted; and it needs but the exercise of a little taste for a maximum of effect to be procured with a minimum of trouble.

Again, there is a wonderful variety of form, colour, and habit; in fact, so diversified are these characteristics, that one is astonished, when noting the effect of such plants as *Yucca gloriosa* or *Y. filamentosa* in a bed, that they are allies, and close allies, of the Lilies of our summer gardens. The botanist, of course, knows that they are, but the average gardener cannot see how two such dissimilar-looking plants, taken at a cursory glance, are brought together by any system of classification.

Compared with even a very few years ago, these sections of hardy plants have increased at a rate that even the most enthusiastic gardener could scarcely have hoped. Not only are our collections altogether richer in species and varieties, but to-day there flourish in our midst plants whose hardiness would have been considered doubtful, to say the least. As evidence of this we have but to point to the bold-looking Eremurus, the indescribably beautiful Calochorti and Brodiaeas, all of which at one time were thought to need the shelter of a house. A better acquaintance with their requirements has placed the cultivator of to-day in a position to grow them without any artificial aids, and our gardens are accordingly the richer by their presence.

CULTIVATION.—Though soil and situation are important factors in the successful cultivation of bulbs and tubers, yet so widely different is the geographical distribution of the individuals comprising the groups that it is impossible to lay down hard and fast rules in respect of them. What, for instance, would suit one bulb would be absolutely fatal to the chances of another, and the peculiarities of each member of a family have frequently to be dealt with. The absurdity, therefore, of attempting to generalise will be at once apparent. To prove the truth of such an assertion one has but to take say the Lilies, which are by far the most popular of any plants to be found in either section. In a state of nature it is possible to find one species inhabiting a swamp; another in a comparatively dry place; and yet a third taking an intermediate position, and revelling maybe in a peaty soil. And so it is with all the larger and

more important genera, whether of bulbs or tubers. In connection with the latter, it is only necessary to consider for a moment the Anemones—amongst the most popular of hardy plants—to fully appreciate the relevancy of the remarks. There are no general methods of culture which could, with any degree of certainty, be put forth as applicable to the larger genera of bulbous and tuberous plants, or, indeed, to some of the smaller ones where the conditions under which the species are found naturally vary so much. Seasons, again, exercise a considerable influence upon all plants, and particularly upon those belonging to the sections with which we are now dealing. Take the Lilies, for instance. Some seasons certain species will grow away and flower like weeds; the next they will miserably fail, though treated similarly. The exact cause remains inexplicable, but that such failure alternates with success is the experience of everyone who has tried his hand at cultivating even the commoner Lilies.

In the matter of propagation, likewise, of both bulbs and tubers, the methods vary not only with different families, but also with individual members of the same family, and here again no hard-and-fast line can be laid down. Each genus, therefore, of either section will be taken alphabetically, and its peculiarities pointed out as far as space will admit. Many, bulbous and tuberous plants are extremely impatient of disturbance, while others are best taken up as soon as mature, and stored away until planting time again comes round.

The general method of increasing these popular hardy bulbs and tubers is by offsets, which in many cases are freely produced, and this with amateurs is by far the most satisfactory one. Seed-sowing is undoubtedly interesting, but the process is fraught with not a little difficulty, while the time occupied from the seedling to the flowering stage is so long (four to five years in some instances) as to weary all but actual growers for the trade. For all that, it is highly important that the cultivator should be made aware of the fact that this or that plant reproduces itself freely from seed. To cite an instance, the beautiful and graceful St. Bruno Lilies (*Anthericum*). These are very free in the matter of seed, and this constitutes one of their most useful characteristics when naturalised, as they should be, in grass.

The proper time for planting bulbs and tubers is but imperfectly known, and it is this lack of knowledge which is

responsible for the majority of the failures recorded against them. Popularly it is supposed that so long as, say, the Dutch bulbs are in the soil before Christmas, this will suffice. Such is a great mistake. The time to plant is as soon as they are procurable. Narcissi are frequently left out of the soil far too long, with the result that instead of first making plenty of roots, they develop foliage, and flowers are conspicuous by their absence. August and September are the best months in which to plant Narcissi (including, of course, Daffodils); for though some kinds are accommodating enough to give a fair percentage of flowers if put in later, the way to ensure success is to plant early. And so it is with many other bulbs. Lilies deteriorate very quickly when left out of the soil, and failures innumerable are attributable to neglect of this important matter by the cultivator.

Where to plant bulbs and tubers is a matter dependent largely upon local circumstances. Some are best planted between other subjects which form, as it were, a kind of natural protection. Many of the choicer Lilies, for instance, might with advantage be interspersed between Rhododendrons, Roses, and the usual occupants of the shrubbery border, providing they are not actually under such. The first-named, in particular, are admirably adapted for associating with the taller-growing Lilies. Whole beds, again, might be devoted to the culture of bulbs and tubers, grouping, say, some of the Lilies in the centre, and then disposing others according to height gradations and colour variations until the actual edge is reached. Even this might very well consist of the choicest spring-flowering bulbs, which give a mass of colour early in the year, and then the foliage dies down. In the borders themselves, good clumps of bulbs are preferable to a few straggling lines. Beds which are likely to be utilised for the ordinary summer occupants are not the best places in which to grow spring bulbs, some of which it is necessary to lift before they are ripe, to the certain detriment of the floral display the succeeding season.

In parks and pleasure-grounds where the closely-shaven lawn is not considered the be-all and end-all of a well-kept garden, there is no more beautiful way of employing some of the most effective of bulbs and tubers than by naturalising. What, for example, has a more charming effect than the elegantly chequered purple Snake's Head (*Fritillaria Meleagris*), rearing its gracefully drooping bell-shaped head above the fresh green grass of spring. True, it is only a native plant; but what a gem! There

are several other members of the same family which are quite as hardy, quite as well adapted, and, if anything, even more effective; yet, how seldom do we see them. Potted up in a formal way, and used for the decoration of the greenhouse and conservatory, they are found in plenty, but that is all. Naturalised, what would give a more delightful effect than the smaller-growing Narcissi, the graceful Anthericums, the neat Snowdrops, the many-hued Crocuses, the bright Alliums and Grape Hyacinths, the distinct Cyclamens, with their characteristically pretty flowers and delicately-marked foliage, or the sweet little Winter Aconites, whose pretty flowers, surrounded by a light green collar, are the first to remind us that spring is at hand? How different this from the regular lines of bulbs and tubers all too frequently met with in gardens! The latter is restricted, hard, formal, and unnatural: the former free, simple, and decorative to a degree—Nature, in fact, unadulterated by Art. It is astonishing to think how slowly we progress with this delightful form of gardening. Even those whose gardens and means are unlimited are slow to adopt naturalisation; and yet these very people are the first to complain of bare patches under the shade of trees. There are bulbs and tubers in goodly variety that would flourish under trees, the flowers brightening up the landscape in spring, and the foliage imparting freshness when the trees themselves were verdant. One of the most useful of these subjects for planting under trees is *Cyclamen neapolitanum*, whose rosy-pink flowers in autumn are no less acceptable and decorative than is its silvery-marbled foliage at other seasons. *C. græcum* can be similarly recommended. Belonging also to the tuberous section are the exquisite Winter Aconite, that will thrive where little else will succeed, the distinctly beautiful *Anemone apennina*, and the native Lesser Celandine (*Ranunculus Ficaria*); while amongst bulbs that might be tried are our native Bluebell (*Scilla nutans*), the Spanish Scillas (*S. campanulata* and its varieties), and Solomon's Seal (*Polygonatum multiflorum*). Best of all for the purpose, however, because they will not only thrive under the densest shade, but are proof against the attacks of rats and rabbits, are: *Allium neopolitanum*, *Ornithogalum nutans*, *O. umbellatum*, and *Trillium* (Wood Hyacinth).

It has been urged as an objection to several of the best known spring-flowering bulbous subjects used for garden decoration, that they are bare of foliage at the time of

flowering. Granted that this is an objection ; yet it is one which may readily be overcome by providing "carpet plants," as they are termed, which not only take off the naked appearance presented, but act as a protection to the bulbs, and prevent the flowers of the latter from being spoilt by rain splashes. In the rock garden this method of locating some of the choicer denizens, such as the pretty Iris species, which of late years have come to the front, has found great favour. Excellent for the purpose are such carpet plants as *Silene pendula*, the Mossy Saxifrages, the neat-growing evergreen Candy-tuft (*Iberis correaefolia*), the quick-growing, sweet-scented Thymes (*Thymus Serpyllum* and *T. Chamædrys lanuginosus*), and others.

PESTS, &c.—Hardy bulbs and tubers enjoy comparative immunity from insect and other pests, though of late years two or three fungoid diseases which are difficult to combat have put in an appearance. The worst is what is known as the Lily disease, a *Sclerotinia* species which attacks several of the most popular species, grown alike for garden purposes and for market, but chiefly the pure white *Lilium candidum* (Madonna Lily).

The cultivator must therefore be careful to purchase his bulbs from a trustworthy source, and not to be led away by low prices. The grower is first made aware of the presence of the fungus by the foliage becoming spotted with rust, which in time spreads, until the expanded flowers and unopened buds are also attacked. The latter are quite disfigured by patches of brown. It is of little use trusting to Nature to repair the mischief, for frosts have not the slightest effect upon the sclerotia which carry on the cycle of life in the succeeding season. It is very important to take precautionary measures directly the disease is noted, as the spores are readily transmitted

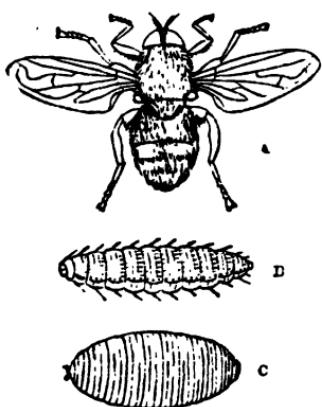


FIG. 107.—NARCISSUS FLY
IN ITS VARIOUS STAGES.

by insect and other agencies, and a large area is quickly infected. Moreover, it is thought that a similar, if not actually the same, fungoid disease attacks the Tulip. All the dead foliage, flowers, &c., of plants known to be infected should be very carefully removed and burnt. Resting bulbs might be kept for a time in powdered sulphur, and very weak solutions of the Bordeaux Mixture might be sprayed on the plants as soon as the disease manifests itself.

Of insect pests one of the worst is the Narcissus fly (*Merodon equestris*), which destroys vast quantities of the bulbs. The presence of this creature may be readily noted at planting time by the softness of the bulb in which the maggot is feeding. The aldermanic grub remains in the bulb practically through the winter, when it changes into a pupa in the soil, and eventually emerges as a fly in April or May (Fig. 107, A, B, and C). The perfect insect has a very close resemblance to a bee, the blue-black body being banded with golden-yellow. By way of prevention, all soft bulbs should be carefully examined; any which show signs of premature decay and general deterioration should be marked, and if the maggot is found to be in them, say in August or September, they should be destroyed. Fig. 108 shows a bulb from which the maggot pupated in November.

Snowdrops, again, in certain seasons and in certain districts, are attacked by a very destructive fungus, *Sclerotinia galanthina*. The peculiarity of this disease is that there is little to warn the grower of the impending attack. The bulbs blossom and develop their foliage as if they were perfectly healthy. The next season, however, there is frequently not a single bulb to be found. Ground which has been infected should receive a dressing of fresh lime, well dug in. All diseased bulbs should also be burnt.

Gladioli are popularly supposed to suffer decay from a fungus, but so far no one has been able to specify what. By Gladioli specialists, however, the decay is thought to arise from an error in treatment in not lifting the corms sufficiently early. And this certainly has been my own experience.

The above constitute the chief of the pests against which the grower of hardy bulbs and tubers has to contend, and it will at once be admitted that the list is not a very formidable one.



FIG. 108.—DISEASED NARCISSUS BULB,
DUE TO THE ATTACK OF NARCISSUS FLY.

Rats, voles, and mice are very destructive in some gardens, the first-named animal more particularly where waterside planting is adopted, and they must be trapped or poisoned, though this latter needs to be done with great care where there are domestic animals kept.

Having dealt incidentally, at any rate, with the uses, cultivation, and pests of bulbs and tubers, there now remains the enumeration of those genera, species, and varieties which ought to be represented in our gardens. The task, though a somewhat invidious one, is by no means impossible. For room-decoration and window-boxes many of the plants under notice are amongst the best, and the suitability of any species for these purposes will be noted.

AGAPANTHUS (African Lily).—A genus of stately liliaceous plants from South Africa, which are sufficiently hardy to withstand English winters, at any rate in the South and West, with a slight protection of straw or other light material during severe weather. The tubular, bell-shaped flowers are of various shades of blue or white, and are produced in large umbels. A deep, well-drained, light rich soil, enriched with well-decayed manure, suits them best. They may be used for the open border, or in large tubs to be disposed along the terraces and walks, or for planting by the sides of ornamental water, their noble appearance, deep green foliage, and striking flowers giving a most effective appearance. Plenty of water should be given in summer, and this supplemented by liquid manure when the flowers are forming. Increased by division in spring. The best kinds are the time-honoured *A. umbellatus*, *A. u. Mooreanus*,

and *A. u. maximus*. The tuberous roots may be lifted and stored much after the manner of Dahlias and Cannas. There are both deciduous and evergreen kinds.



FIG. 109.—*ALLIUM MOLY*.

ALLIUM. — Pretty and decorative bulbs belonging to the Onion family, and inheriting the evil smell characteristic thereof. They are easily cultivated, and will thrive almost

anywhere. For naturalising they are excellent, but they impart bright colour to and furnish flowers in the borders in early summer. They are increased by offsets in autumn, or by seed

sown in spring. To be recommended are: *A. Moly* (Fig. 109), yellow, early summer; *A. neapolitanum*, white, with green stamens, early summer, although immense quantities of flowers are upon the markets early in the year, the species forcing well; *A. cæruleum*, deep blue; *A. narcissiflorum* (syn. *A. pedemontanum*), mauve, drooping, bell-shaped; *A. triquetrum*, white; *A. Ostrowskianum*, rose-crimson; and *A. flavum*, yellow. For naturalising, the best kinds are *A. Moly* and *A. neapolitanum*.

ALSTRÖMERIA (Herb Lily; Peruvian Lily).—A genus whose hardiness has been much discussed, but whose distinctness and beauty are undeniable. There can be little doubt about the hardiness of the majority of species classed as such by nurserymen. The secret of their culture lies in the planting and position. A mere covering of the bulbs spells disaster: success is assured by planting from the middle to the end of October, at a depth of from 6in. to 8in. in a sunny border. This is one of the genera of plants which are impatient of disturbance, and once planted the bulbs should not be touched for several years, as they do not attain their full beauty until after the second or third year.

Alströmerias are essentially plants for the border, and noteworthy species are: *A. aurantiaca*, rich orange, spotted with red—one of the best and hardest; *A. chilensis*, varying from orange to deep red; *A. pelegrina* (Fig. 110), yellowish-white; and *A. psittacina*, deep red, with green splashes. For providing cut material, these plants are most useful, the flowers remaining good over a long period. Height 2ft. to 3ft. They are not fastidious as to soil, but require plenty of water when growing, and a summer mulching is beneficial. Readily grown from seed sown as soon as ripe either in pots or in a prepared border.

AMARYLLIS (Belladonna Lily)—Though not as hardy as the majority of subjects which should be given a place in those portions of the garden to be devoted to bulbs and tubers, this is sufficiently so to warrant its being included. There can be no doubt as to its handsome appearance, nor yet again as to its value, seeing that it flowers in late autumn, maturing its foliage



FIG. 110.—ALSTRÖMERIA PELEGRINA.

in the spring of the following year. Many plants are catalogued as Amaryllis, but these, as a rule, belong to different genera, requiring glasshouse treatment—Hippeastrums, Sprekelias, &c. A position where these bulbs will get plenty of sunshine is one of the requirements in connection with their culture which must be fulfilled; others are a sandy soil, in which there is plenty of loam, and deep planting. Far too many amateurs plant the bulbs too shallow, with the result that they succumb to frost. A south border under a wall, or even under the shelter of a glass structure, where sun can reach, will suit them well, providing the

bulbs are inserted 6in. to 9in. deep. The drainage material must be ample, and 3in. or 4in. of broken bricks at the bottom of the quarters prepared for the reception of the plants will be calculated to keep the bulbs from rotting, as they ought not to be disturbed very frequently —once in four years will be often enough. September is the best month to plant, and a mulching of leaf-mould will afterwards be found beneficial. As an additional precautionary measure, light litter may be strewn over the bulbs in winter. Liquid manure in summer will be helpful, as also will plenty of water in a dry season. These Lilies may also be grown in pots. Height about 2ft. The typical *A. Belladonna* is a delicate pink, and there are other coloured varieties, though none that

surpass it for utility; it is, moreover, delicately fragrant, thereby adding another charm. *A. B. kewensis* (Fig. 111) is superior in size and colour to the type.

FIG. 111.—AMARYLLIS BELLA-DONNA KEWENSIS.



moreover, delicately fragrant, thereby adding another charm. *A. B. kewensis* (Fig. 111) is superior in size and colour to the type.

ANEMONE (Windflower).—Few genera will compare with this for chaste beauty, variety of colour, or earliness of flowers. Indeed, to it belong some of the choicest gems for border, rockery, or naturalising, putting forth as they do their elegant blossoms at a time when the garden is singularly bare of floral subjects. One is often puzzled to know what to plant under

the shade of trees. In *A. apennina* the gardener has a most useful subject, and one whose accommodating nature is not sufficiently well known; it is perfectly at home, too, in the wild garden or in the trim-kept, shady border, its bright blue flowers lighting up the dullest of surroundings. This is but one of several species which ought not to be omitted. Readily increased by division in autumn.

Earlier than *A. apennina*, but approaching it in colouring, is *A. blanda*. By affording it a choice site, such as a sunny bank or a rockery, it will give of its best, and, what is more, produce flowers over a very long period. Planted beneath Roses in the border, it has a pretty effect. Increased readily by division, though, like most of the species, it can be quite easily grown from seed. This species will be found most accommodating as to soil, for even in cold, heavy soil it will flourish.

In the Poppy Anemones, which have been evolved from the old *A. coronaria*, the gardener has a delightful class of plant, but one which does best in warmer soils than is the case with the last-mentioned species. The season of flowering, too, may be prolonged almost indefinitely by planting, as is frequently done, for both an autumn and a spring display. These Anemones are found both Single and Double (Fig. 112), and in a variety of colours—rich blues, dazzling scarlets, delicate pinks, snow-whites, and also in flakes. The Singles should be grown from seed sown in June, either in the prepared border or in boxes of fine soil, pricking out the plants in autumn where they are to blossom. These Poppy Anemones are children of the sun, hiding their beauty from the common gaze during dull weather, but quickly opening under solar influence. The Doubles are propagated by division in autumn or in spring, though the first-named season is the better. Named varieties there are in abundance, Chapeau de Cardinal, Snowball, and Bluebeard all being excellent in Doubles, while in Singles the Victoria Giant and The Bride are sure to give



FIG. 112.—*ANEMONE CORONARIA*.

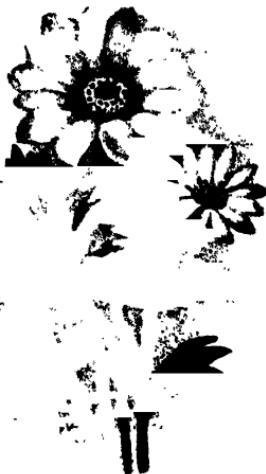


FIG. 113.—*ANEMONE PALMATA*.

The strain of Poppy Anemones popularly described as St. Brigid rank among the finest forms of this delightful section. The flowers are large, semi-double, and of rich and varied hues. These are readily grown from either seeds or roots. Worthy, too, of note, are the Chrysanthemum-flowered varieties.

In growing Anemones from seed the ground must be made firm previous to sowing the seed. Select a time when the soil is in a nice friable condition, scatter the seed, then lightly cover with sand, and treat as previously advised. When the seedlings are about 2 in. high, prick them out where they are to flower.

The secret of successful culture of *A. coronaria* and its varieties, as well as of some others, is to provide them with

satisfaction. Some good mixtures, suitable for those of limited means, are also procurable from nurserymen. These Poppy Anemones, as all the other kinds, like a rich diet. The seed is somewhat difficult to separate, the best way being to sprinkle it with fine earth. It should be lightly scattered, very lightly covered with soil, and sheets of paper or mats placed over it to prevent undue evaporation. Germination will quickly commence, and the seedlings appear, when the mats should be discarded, and gentle sprinklings given. Growth will be fairly rapid, and the young plants will blossom early in the next season.



FIG. 114.—*ANEMONE STELLATA*.

quarters in which they will be sheltered from cutting ground winds. This is *absolutely* necessary. Late planting of the roots is also advisable, December and January being preferable to September and October, especially if the ground be open. If got in at the latter period they often make top growth in a few weeks, and if it once gets injured by winds this is fatal to the chances of flowering in spring.

There are several other spring-flowering kinds deserving of mention, amongst which are *A. palmata* (Fig. 113), yellow; *A. nemorosa Robinsoniana*, a blue variety of the common Wood Anemone; *A. ranunculoides*, yellow; and *A. stellata* (Fig. 114), in a variety of colours.

ANOMATHECA.—Though oftener grown in pots for the greenhouse or window garden, *A. cruenta* is hardy enough for outside cultivation. It is a native of South Africa, and attains a height of about 1 ft. A light, sandy soil, a warm raised border or rockery, and deep planting, compared with the size of the bulbs, constitute the chief requirements of this pretty member of the Iris family. The flowers are small but of a brilliant scarlet, and the leaves are graceful and grass-like. There is a recently-introduced species in *A. grandiflora*, with larger flowers. The genus is sunk by modern botanists in *Lapeyrouisia*. Readily increased by offsets in spring, or by seeds, which ripen freely.



FIG. 115.—*ANTHERICUM LILIASTRUM*.

ANTHERICUM (*Phalangium*).—Quite amongst the first rank of hardy bulbous flowers are the St. Bruno and St. Bernard Lilies (*A. Liliastrum* and *A. Liliago*), and they are fast becoming popular for borders or for associating with other graceful plants, like some of the Irises, in a mixed bed: while they also show to advantage when naturalised. The blossoms of the two species named, which are the commonest of those met with, are white. *A. Liliastrum* has flowers resembling small Lilies (Fig. 115); while *A. Liliago* has small star-shaped flowers. There is a yellow-

flowered plant in cultivation, usually classed as an *Anthericum—Hookeri*. It should, however, be relegated to a separate genus, *Bulbinella*. Most graceful foliage characterises the plants, which produce their flowers in early summer, the spikes being from 1st. to $2\frac{1}{2}$ ft. long in the case of the large form of *A. Liliastrum*. Though usually found in trade catalogues under the names here adopted, *A. Liliastrum* is more correctly described as *Paradisea Liliastrum*. Increased either by division in autumn or by seeds. *A. ramosum* is a most graceful species, with white flowers. It should be included where space can be spared.

BABIANAS.—Undeniably beautiful though these are, they are too tender to be grown outside, except in very favoured spots and

under very favourable conditions, such as a sunny south border, and a light, loamy, well-drained soil. The flowers are bright as to colour, and Ixia-like in form (Fig. 116). December is the best month to plant, covering the ground well with light litter to protect the foliage from frosts; it should be removed in spring. The bulbs should be planted some 3in. or 4in. deep.

BESSERA.—*B. elegans*, a pretty little Mexican bulb, is sometimes successfully cultivated outside when conditions similar to those named under *Babiana* obtain. It cannot, however, be classed as truly hardy. The flowers are scarlet, and in drooping umbels, and the foliage is graceful.

BLOOMERIA.—Here again we have one of those choice bulbous subjects whose culture may be attempted where conditions similar to those recommended for *Brodiaea* obtain.

The species *B. aurea* is yellow, with a brown stripe, and the flowers are produced in umbels in summer.

BRAVOA.—Another plant for a sheltered border, and a light, warm soil, is *B. geminiflora*. It is a bright little subject, with drooping racemes of scarlet tubular flowers borne on spikes 2ft. high. Increased by offsets in autumn.

BREVOORTIA COCCINEA (Fig. 117) is the plant usually cultivated as a *Brodiaea*, and is one of the most graceful and striking of such plants. The tubular flowers are scarlet, tipped with green, and are produced on very thin wiry stalks, 2ft. or more high. For culture, see *Brodiaea*.



FIG. 116.—BABIANA.

BRODIÆA.—To America we are indebted for this most beautiful family of liliaceous plants, which until a few years ago were practically unknown in the hardy garden. The genus is a somewhat confused one—at least, by amateurs—and those in search of the plants will find them catalogued as well under *Milla*, *Triteleia*, *Bloomeria*, &c., while several of the plants best known to gardeners under the name of Brodiæas are now allocated to other genera. Two of the best examples of these latter may be found in *Brodiæa coccinea* (now *Brevoortia coccinea*) and the remarkable plant *Brodiæa volubilis* (now *Stropholirion volubilis*). Mr. J. G. Baker, in 1896, issued an excellent monograph of the genus in the *Gardener's Chronicle*, and all who are botanically interested would do well to consult it.

Brodiæas are quite hardy if but intelligently treated, and the marvel is that such gems for the border or choice rockery should have escaped notice so long. A south border (raised) and a light sandy soil are their chief requirements. Planting should be done in October or early in November, and the bulbs need not be disturbed except for removing the offsets, which are freely produced. A dozen bulbs in a group will prove very effective. In height Brodiæas range from 1 ft. to 2 ft. on the average, the colours varying considerably. There is one slight drawback to the plants, or, rather, to some species, and this is that the foliage is frequently shabby before the flowers are at their best. Gardeners, however, get over this by carpeting the spot with a later-flowering compact annual. For pot-plants, Brodiæas have few superiors. Some of the best kinds are *B. Howelli lilacina*, soft blue, tipped with white; *B. grandiflora*, rich violet-blue, dwarf-growing, very free; *B. congesta*, purplish-blue, lasting a long time in perfection, 2 ft.; *B. laxa* (*Milla laxa*, *Triteleia laxa*), variable as to colour, from rich violet to purplish-blue; *B. Howelli*, white, 2 ft.; *B. Hendersoni*, yellow; *B. Douglasti*, bright blue, 2 ft.; *B. Orcutti*, light blue, and one of the latest to flower, 1 ft.; *B. ixioides* (*Calliprora lutea*), bright yellow with green bands, and the superior form of it known as *erecta*, which is of more compact habit and has erect flowers.



FIG. 117.—BREVOORTIA COCCINEA.

BULBOCODIUM VERNUM (Fig. 118) is a gem amongst spring flowers, whether used in the border or on the rockery, appearing, as it does, with the earliest of bulbous plants. The flowers are rosy-purple, and resemble somewhat those of Crocuses. The

leaves are produced with the flowers, and are lance-shaped. Early planting is desirable, and August will be found a good time for either dividing up the bulbs or making new plantations.

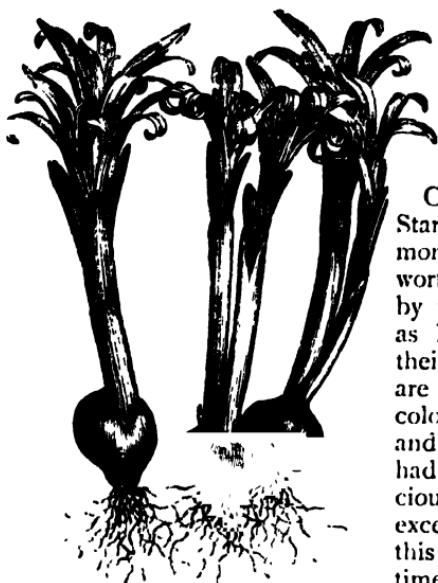


FIG. 118.—*BULBOCODIUM VERNUM*.

of the commoner things which are now given a place. For the best results a raised border should be made, the soil being composed mainly of leaf-mould and sand. The site should be a sunny one. Planting should be done in the autumn, and the bulbs lifted as soon as the stems decay, and well ripened each season. They may be propagated by offsets or by seeds. The latter should be sown in well-drained pans, thinning them out as required, when they may be expected to blossom in about three years. Though some of the kinds will weather the winter without protection, it is best to cover the beds with light litter, removing the same in spring.

The genus also includes the Cyclobothras, which differ from the Calochorti in having drooping, closed flowers. The plants vary in height from a few inches to 2ft. or 3ft. The smallest, like *C. Benthami*, canary yellow; *C. albus*, white; *C. lilacinus*, purple; *C. Maeveanus*, white; and *C. caeruleus*, pure white, with bluish hairs, are well suited for the rockery. They are also the earliest to flower. Later come the Mariposa Lilies, which may

CALOCHORTUS (*Mariposa Lily*: *Star Tulip*).—These are uncommonly beautiful bulbous plants, worthy of the widest recognition by the hardy plant lover, so long as he can provide the conditions their culture entails. The flowers are of immense size, exquisitely coloured, blotched, or pencilled, and they are, moreover, to be had over a long season by a judicious selection. Few orchids can excel in beauty the members of this little-known genus. At one time these bulbs were regarded as too tender for outside cultivation, but their exact requirements now being understood, they can be successfully cultivated as many

well be represented by any or all of the *C. venustus* forms (Fig. 119), but especially by *citrinus* and *oculatus*. *C. luteus* and *C. Weedii*, orange-yellow, and var. *concolor*, rich yellow; *C. l.*



FIG. 119.—*CAMASSIA*.

white, with black eye; *C. Kennedyi*, scarlet; *C. Plummerae*, soft lilac; *C. claratus*, bright golden-yellow; and *C. Gunnisoni*, white, with greenish zone, are all desirable.

CAMASSIA ESCULENTA (Fig. 120) is the most popular member of the genus in the hardy bulb garden, though *C. Cusickii* promises to become so when better known. The plants grow from 1½ ft. to 2 ft. high, and are suitable either for the flower border or for naturalising. Propagated by offsets in autumn; but the bulbs dislike frequent disturbance. *C. esculenta* (Quamash) is a liliaceous plant with bright blue flowers produced during summer. It likes a partially shaded position in a fairly rich soil, though it may also be grown in the ordinary border.

CHIONODOXA.—In this genus we have spring flowering bulbs of the highest order of merit, of the brightest as regards colouring, of the hardest constitution, and of the easiest culture. Planted in bold groups in the border or bed they are very effective; and



FIG. 120.—CAMAESIA ESCULENTA.

associated on the rockery with some of the early Narcissi, like *N. minimus*, they are not likely to be forgotten. For naturalising these bulbs are eminently suitable. To frosts they are not in the least susceptible; while they withstand wet weather better than most spring-flowering subjects.

They should be planted in autumn about 2 in. deep; they increase very rapidly. *C. Lucilia* (Snow Glory) is a lovely kind, with deep blue flowers having a white centre; *C. grandiflora* (*C. gigantea*) is a larger form of the same species, and a little later flowering; while *C. sardensis* is another variety bearing deep blue flowers.

CHRISTMAS ROSE.—See Helleborus.

COLCHICUM (Meadow Saffron).—The members of this genus are chiefly autumnal flowering, though one or two, like *C. monanthum*, blossom in spring. The genus is not well represented in gardens, because of the somewhat ephemeral flowers and the bare appearance presented due to the foliage being produced at another season. Though suitable for borders and rockeries, they are best naturalised, as the grass then forms a fitting carpet. Even when utilised for beds or borders, a carpet of greenery should be provided in the form of some of the smaller Saxifrages, Aubrietas, Thymes, &c. Planting should be done as soon as the bulbs arrive, and they should not be often disturbed. A sunny position and a sandy soil are what

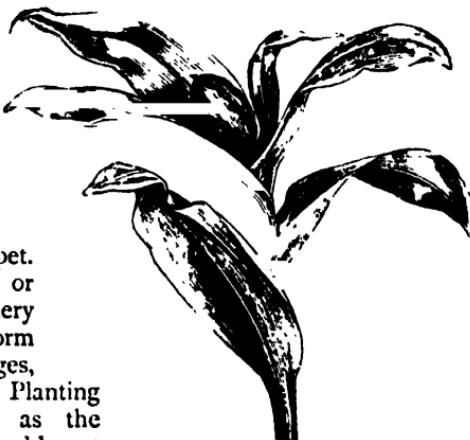


FIG. 121.—COLCHICUM SPECIOSUM.

they delight in, though they will thrive in almost any ordinary flower-border.

Of the autumn kinds the best and most distinct are *C. speciosum* (Fig. 121), rosy-purple; *C. Parkinsoni*, violet-purple, elegantly chequered; *C. byzantinum*, rose-pink; and *C. autumnale album plenum*, with its large, showy, double white flowers. *C. montanum* has already been alluded to as the best of the spring-flowering kinds, but *C. crociflorum* might be named as a fitting companion. The former varies from pink to whitish, and the latter is white, with delicate violet-purple lines. Then there is *C. luteum*, yellow.

CONVALLARIA MAJALIS (Lily of the Valley) needs no recommendation or description. A warm, partially-shaded border, and some good turf-like loam, are what the crowns delight in; with plenty of moisture in the growing season, aided by weak manure-water occasionally. Drought is to be guarded against, and this may best be done by mulching the crowns at planting time with thoroughly rotten manure. Autumn is the best time to plant, and little else will be needed except to see that the crowns do not become too crowded, or weakly flower-spikes will be sure to result. In large gardens, where a good supply of the flowers is required, the crowns may be inserted in different positions, some in north, others in south borders. Besides the ordinary variety there is a splendid form in Fortin's (Fig. 122), while there is another having striped foliage, but this is its only recommendation. It cannot be too widely known that Lilies of the Valley flower only on three-year-old crowns. There is no necessity to refer to the value of the Lily of the Valley as a pot-plant.



FIG. 122. - FORTIN'S LILY OF THE VALLEY.

CRINUM. - Several species belonging to this genus are hardy in a sandy, well-drained soil and a warm position. The bulbs must, however, be deeply planted, 1 ft. being none too much. The middle of May is the best time for this. The after-attention consists in affording plenty of moisture, and in giving some weak manure-water when the spikes are pushing. *C. catense* (properly *longifolium*) and its varieties are the best for outside culture; but *C. Powellii alba* (white) and *C. Moorei*, with handsome

blush-rose flowers, may likewise be planted under the wall of a stove or a greenhouse. To avoid having the flowers killed by frosts the plants are sometimes lifted and placed in the greenhouse. These plants remind one of the Hippeastrums as regards their flowers. Increased by seeds or by offsets.

CROCOSMIA AUREA, better known, perhaps, as *Tritonia aurea*, is a most useful plant for a warm border and a light, rich soil. The graceful flowers are Gladiolus-like in form, and are highly prized for cutting. The chief value of this plant lies in the season at which it flowers—autumn. In the South and West of England the bulbs need not be lifted if assigned the position advocated; and even where lifting is adopted, they are best potted up direct from the soil before winter frosts appear,

replanting them in May. The plants are from 2ft. to 3ft. high, and several bulbs should be planted in a group, allowing 3in. to 4in. between each. Besides the type named, which is orange-red, there are in *imperialis* and *maculata* two well-marked varieties worth cultivating.



FIG. 123.—CROCUS SPECIOSUS.

to borders. Massed, they of course look well; but then they have to be lifted, which is not best calculated to secure good results another season, unless great care is taken. They dislike a heavy, damp soil, and being disturbed. Only when the bulbs show signs of deteriorating should they be lifted. September or October is the time to plant the spring kinds, and though the bulbs are sufficiently accommodating to flower if inserted later, it is not desirable. Crocuses may be grown to flower earlier by potting them up or even by placing them in saucers filled with Jadoo Fibre, a substance which for indoor work has much to recommend it. When

CROCUS.—For utility, ease of culture, or for bright colours, Crocuses, whether autumn- or spring-flowering, are hardly to be surpassed, and whatever method of planting is adopted, they are sure to give satisfaction. Next to naturalising them, there is no better way of utilising Crocuses than as edgings

grown in the open the amateur must guard against two things: the ravages of the sparrows, which may be prevented by stretching black cotton across their quarters, and the removal of the foliage before it is ripe. There is a great temptation to do so on account of its unsightly appearance, as there is to twist it into a knot for a similar reason. Both are, however, fatal to success another season. Crocuses generally are increased by offsets, and some few produce seed freely. When this is the case it should be sown as soon as ripe. Deep planting is not good for Crocuses. The best results are obtained when the bulbs are just covered with soil.

Of spring flowering species and varieties the following may be recommended: *C. Imperati*, lilac, variable; *C. Olivieri*, orange; *C. Sieberi*, pale violet, with orange base; *C. susianus* (Cloth of Gold); *C. obesus*, purple; and several others. There are also, of course, the numerous varieties descended from the well-known *C. vernus*; while mention should also be made of the lovely *C. biflorus*, a winter or early spring kind, whose outer petals are white, striped, and the inner ones pure white.

In the autumn-flowering section, which should be got into the soil as soon as on the market, are several gems, but none more effective than *C. speciosus*, whose fine purple flowers, with rich yellow stamens, are seen to best advantage when naturalised, or when grown upon the rockery (Fig. 123); *C. medius*, purple; *C. zonatus*, lilac, with yellow base; and *C. iridiiflorus* (*C. byzantinus*, Fig. 124), purple and lilac. There are, moreover, a number of other species and varieties which flower in mid-winter, but most of these are best grown under the protection of a frame. Exceptions are *C. chrysanthus* and its varieties; and *C. Tommasinianus*, a profuse blossomer, and very hardy. In colour this latter is a combination of silvery-grey and pale blue, and it is one of those very desirable kinds which no gardener can afford to overlook.



FIG. 124.—CROCUS IRIDIIFLORUS
(*C. BYZANTINUS*).

CYCLAMEN (Sowbread).—Though neither a bulb nor a tuber in the strict sense of those terms, it is so generally classed by trade growers, that facility of reference at least will be best served by mentioning it here. The really hardy kinds are few in number, but what they lack in this respect they make up for in utility and decorative value. They are more particularly useful for growing under the shade of trees, where little else save Ivy would live for more than a season. Yet *C. neapolitanum* in such a place will yield its white and lilac-tinted flowers in profusion, these being succeeded by marbled leaves quite as decorative. For woodlands, again, for rockeries, or for shady banks, they are equally well suited. *C. Coum* (Fig. 125) and its several varieties; *C. hederaefolium*,

which has scented as well as beautiful flowers; *C. vernum*, white and purple; and *C. europaeum*, reddish-purple, are some of the best. All the hardy Cyclamens grow freely in well-drained, rich peaty, or loamy soils, and the majority delight in partial shade. Cyclamens are lime-loving plants; so that when preparing a soil it will be advisable to mix up with it some old mortar rubbish in liberal proportions. They dislike ground winds, and this is why they thrive so well in sheltered positions



FIG. 125.—CYCLAMEN COUM.

under trees. Hardy Cyclamens blossom at all seasons—*C. Coum* and its varieties in winter and early spring; *C. vernum* in spring; *C. europaeum* in summer; and *C. hederaefolium* in autumn. The corms should be planted very shallow in late summer. Increased freely by seed sown in pans in a cold frame in late autumn.

ERANTHIS HYEMALIS (Winter Aconite).—This pretty species is one of the most useful in the whole range of hardy bulbs and tubers, for the flowers sometimes appear in the very depth of winter, and will flourish amidst surroundings—smoke and tree-shade—absolutely fatal to plant-life generally. A glance at the illustration (Fig. 126) will be sufficient to show that it belongs to the Buttercup family. The plant is but 3in. high, of a bright

yellow, set off with a collar of intense green. A warm soil suits it best, though for a time, at any rate, it will flourish in a cold one. It is the best of all flowering subjects for growing beneath shady trees, and should be freely employed, as a perfect carpet of gold will soon be formed. Though when naturalised it looks most effective, yet, flowering as early as it does, it cannot be despised even as a border plant. The tubers should be planted in autumn. Increased by division in late summer.



FIG. 126.—*ERANTHIS HYEMALIS*.

EREMURUS.—The merits of the plants belonging to this genus are slowly being recognised by gardeners. There is, however, one great drawback to their ever being very popular, and that is the liability of the foliage to be discoloured by spring frosts and east winds. The brownness is more noticeable in plants which are placed where the early morning sun shines full upon them, and for this reason a north-west aspect has been advocated. Eremuri are noble plants, and if a well drained, rich, loamy soil and a position sheltered from high winds can be assigned them, they will flourish. To see them at their best, they should be backed by a wealth of greenery. Autumn is the time to plant, and the roots should not be disturbed. The species best known to cultivation are: *E. robustus*, rose-peach, 6ft. to 9ft.; *E. himalaicus*, white, with golden anthers, 5ft. to 8ft.; and *E. Bungei*, yellow, 2½ ft. All flower in summer.



FIG. 127.—*ERYTHRONIUM DENS-CANIS*.

ERYTHRONIUM (Dog's-tooth Violet). — Of late years many additions have been made to this genus, which now furnishes some of the most useful of spring-flowering plants. The varieties of *E. dens-canis* are well adapted for the edges of borders or shrubberies, or for naturalising. The flowers of all are strikingly Cyclamen-like, and are purple, lilac, yellow, pink, and white in colour; while the foliage of some species is elegantly mottled. Erythroniums range between 6in. and 9in. in height. A shady site amongst the grass is an ideal spot for them, while in the border, in choice corners of the rock garden, mixed with Mossy Saxifrages, or under the shade of shrubs, in a good loam, they will blossom freely. Propagated by division in late summer.

Species and varieties worth growing are the common *E. dens-canis* (Fig. 127), rosy-purple; *E. Hartwegi*, light yellow, very early; *E. grandiflorum*, bright yellow; *E. revolutum* (*Hendersoni*), light purple, mottled foliage; *E. Nuttallianum*, deep yellow; and *E. Johnstoni*, pink, with yellow base.



FIG. 128.—FRITILLARIA MELEAGRIS.

FRITILLARIA (Fritillary). — Distinctly interesting are all the hardy members of this genus which have been introduced to cultivation. In few gardens, however, except cottagers', is the genus represented, and there usually by the more stately

Crown Imperial (*F. imperialis*). They are essentially bulbs for the hardy plant lover, as they thrive without any special attention. For the shrubbery, the border, for naturalising, as well as for the rockery, there are species that may be profitably utilised, our native Snake's Head (*F. Meleagris*, Fig. 128) being one of them. Though this has not gorgeous colours to attract attention, yet its grace and refined beauty are sure to enlist admirers, as those who have seen it in the fields around Oxford can testify. Any well-drained soil will grow these bulbs, which should be planted in autumn, and allowed to remain undisturbed until signs of deterioration are evident. Propagated by seeds and by offsets.

The Crown Imperial, with its whorl of nodding flowers, surmounted by a tuft of foliage, is best placed among the choicer shrubs. The colours vary, but are chiefly yellow or red. Far more graceful, however, are such species as *F. aurea*, pale yellow, drooping, 4in. to 5in.; *F. latifolia* and *F. Meleagris*, in a variety of colours, 1ft.; *F. pudica*, deep yellow, drooping, 6in.; and *F. recurva*, orange-scarlet, 1ft., one of the best, though not as robust as some. All the above-named flower from early to late spring, and should be planted in fair-sized groups when utilised in the beds or borders. *F. recurva* needs to be planted in almost pure sand. Fritillarias make excellent pot subjects.

FUNKIA (Plantain Lily). — Foliage rather than flower recommends these to the notice of the hardy plant lover. They are shade-loving subjects, and in such positions their foliage assumes a greater size, as well as being of a better colour. All the hardy kinds can be used with good effect in shrubberies, as lawn plants, or when naturalised in woodlands: *F. Sieboldiana* (Fig. 129) is often used for the last-named purpose; it also makes a bold, permanent edging. A good deep loam will grow any of the Funkias, which may be propagated by division in autumn or spring. Besides *F. Sieboldiana* and its varieties, *F. ovata aureo-variegata* and *F. undulata* can be recommended for outside culture.



FIG. 129.—*FUNKIA SIEBOLDIANA*.

Funkias make capital pot-plants, especially *F. subcordata grandiflora*, with its pure white sweetly-scented flowers.

GALANTHUS (Snowdrop).—Another genus of bulbous plants requiring no recommendation. The Snowdrop has graced our gardens from time immemorial, and though an interchange of commerce is continually presenting us with new forms, all are welcome, even if they do oust from favour some of the species and varieties which were known to an older generation. Snowdrops are so generally associated with spring, that it may not be out of place to refer to the fact that there are autumn kinds.

Most of the Snowdrops will succeed practically anywhere, though a rich, somewhat gritty loam is the best all round. In such a variety of ways may the neat little blossoms be utilised for the decoration of gardens, that it is difficult to call to mind any other bulbous subject of similar size that is so widely appreciated. Associated with Scillas and Chionodoxas in the open border, or with the Iris gems like *reticulata* and many another upon the rockery, they perhaps stand out to the greatest advantage; utilised, however, on grassy banks, under the shade of

trees, they appeal strongest to the true lover of nature. Snowdrops grow best where disturbed least. They should be planted in September, but should it be necessary from any cause to shift them, this may be done after the leaves have died down, or after flowering, and while the foliage is still green. Indeed, as the bulbs are small, the latter plan is preferable for the amateur to adopt.

Of the kinds best known to cultivation there are the various forms of *G. nivalis*, *G. Imperati*, *G. plicatus*, *G. Elwesii*, and the new *G. Ikarie*, which has been grown so successfully at Kew and elsewhere. The Snowdrop is also very pretty when grown as a pot plant for the window, or for the cool conservatory. It will not stand much forcing. Those who wish to experiment may grow the Snowdrop from seed; but for the general gardener the method cannot be advocated, and he should increase his stock by means of offsets.

FIG. 130.—*GALTONIA CANDICANS.*

general gardener the method cannot be advocated, and he should increase his stock by means of offsets

GALTONIA CANDICANS (*Hyacinthus candicans*) (Fig. 130) is a most decorative subject if a warm border can be found for it. The



plant is not often met with, though why it is difficult to understand, seeing how effective it is in the mixed border, and how readily it grows. The fragrant flowers are pure white and bell-shaped, and are produced on stems 4 ft. or 5 ft. high. The bulbs should be planted in autumn, at which season, too, the plants may be increased by offsets. They are impatient of frequent disturbance.

GLADIOLUS (Corn Flag).—Reference has already been made under “Florists’ Flowers” to the chief sections of this popular genus. There remains, therefore, but the species to be dealt with here. None of these are very popular, and are seldom met with outside large collections. They are not subjects for the average gardener to take in hand, as the culture of the majority entails considerable trouble and not a little skill to grow them in the outdoor garden, though they make pretty pot-plants. There are a few kinds which stand out prominently, and which may well be taken in hand by the hardy plant lover: *G. Saundersi*, rich scarlet, blotched white; *G. psittacinus*, greenish, with purple streaks; *G. Colvillei*, bright red, and the white form, *alba*; and *G. purpureo-auratus*, deep yellow, with purple blotch, are of them. All require a sunny aspect and shelter from cutting winds, as the growth is made early. They are, moreover, best accommodated on a raised bed or border, and covered with light litter, like heather, until spring. Except *G. Saundersi* and *G. purpureo-auratus*, the kinds enumerated should be planted in November or December, and lifted annually unless in very favoured spots and soils. The species excepted should be inserted in spring: 4 in. to 6 in. will be a good depth to plant the corms. See also “Florists’ Flowers.”



FIG. 131. HELLEBORUS

HELLEBORUS (Christmas Rose; Lenten Rose).—A time-honoured inhabitant of our gardens is *H. niger* and its varieties

(known as Christmas Roses). Their chief value lies in the fact that they are white, and if carefully managed will be in perfection in mid-winter. To have them in the best of condition it is necessary to cover with a bell-glass, or the blossoms soon get spoilt by dashing rains.

Christmas Roses blossom very early. The first to show flower is *H. niger maximus* in November; this is followed by *H. n. altifolius* (Madame Fourcade, Fig. 131) in January; and lastly by the type *H. niger*.

Equally deserving of praise are the Lenten Roses (*H. orientalis*), whose flowers embrace all the shades of rose and purple, as well as white and cream. Many, too, are exquisitely spotted. No hardy plants are more valuable than these, giving as they do of their best in February—a season of the year when outside blossoms are scarce. Other good kinds are *H. guttatus*, *H. colchicus*, *H. punctatus*, *H. abchasicus*, *H. iridis*, and Gertrude Jekyll.

Hellebores will thrive in most garden soils, but they require partial shade, a west or north-west aspect, and a fairly stiff loam.

During summer they require either to be well watered or to be heavily mulched. If this important detail be neglected the crop of blossoms is poor. They are propagated by division, which is best performed soon after flowering has ceased. April is a good month to take the Lenten Rose section in hand.

HEMEROCALLIS
(Day Lily).—These hardy plants of the Lily family are worth attention: as they will grow in almost any soil, and under almost any conditions,



FIG. 132.—HEMEROCALLIS AURANTIACA MAJOR.

they are valuable to a degree. The only thing that can be urged against them is that the individual flowers are fugitive; but the plants are so floriferous that this is not noticed. In the mixed border or in the shrubbery they are equally at

home, and they may be planted in autumn or early spring. The flowers are yellow, of different shades, many are fragrant, and all are produced in summer.

All the Day Lilies are valuable for cutting, especially the following: *H. flava*, fragrant, early flowering; *H. Thunbergi*, sweet-scented, late flowering; *H. Dumortieri*, dwarf, very free; *H. disticha flore pleno*; and the new *H. aurantiaca major* (Fig. 132). These plants are excellent for hot, dry, poor soils, although they will thrive almost anywhere. Propagated by division in late autumn, but the clumps are better if not very frequently disturbed.

HYACINTHUS (Hyacinth).—Everyone is acquainted with the Hyacinths—at least with the Dutch kinds, which are those in general cultivation. They are a most popular class of plant, and will blossom in either town or country. Their great drawback, however, is that they deteriorate after the first season, and the only way to get really fine flowers is to plant each season. Beds of Hyacinths make town gardens look gay during the early spring months, and good-sized clumps (the bulbs being arranged 6in. to 8in. apart) always look effective in the mixed border. They delight in a well-drained light but fairly rich soil. The bulbs are liable to be nipped with spring frosts, and for this reason some growers cover their quarters with light litter. When planting, due care must be taken with the colour distribution, and when the flower spikes are fading they should be removed. This is especially necessary if it is intended to use the bulbs another season. For list of varieties, both double and single, see end of this Chapter.

So much for what are popularly spoken of as the Dutch bulbs. There are, however, one or two species which ought not to be omitted from the bulb garden—*H. amethystinus* (Spanish Hyacinth) for instance. This is a South European species, introduced as long ago as 1759. The flowers are a bright blue, and are produced in loose spikes in May. This bulb should be given a place in every garden where space can be found. The plant sometimes catalogued as *Hyacinthus candicans* is now regarded as a *Galtonia*, under which name it is described. There is also a pretty little species flowering early in the year—*H. azureus*.

IRIS.—A large and interesting family, which, botanically, is divided into two broad sections—Bulbous and Rhizomatous. The former embraces the English and Spanish Irises, and the latter the Flag Irises, whose beautiful and varied colours lend such a charm to our gardens. Besides the English and the Spanish Irises already alluded to, there are quite a large number of species belonging to the Bulbous section which rank amongst the earliest of spring flowers if provided with a warm, sheltered situation, say on a rockery. To this belong the elegant

I. reticulata (Fig. 133), the equally beautiful *I. Bakeriana*, and *I. histrioides*. These require considerable care to bring them to perfection in the outdoor garden, as they are soon spoilt by heavy rains in spring. The first-named is also very liable to mildew, which destroys vast numbers of the bulbs.

Apart from their varied hues and brilliant colours, Irises have other qualities which entitle them to consideration. First may be mentioned their ease of culture; secondly, their accommodating nature, for amongst the Flag Irises are to be found a number which will flourish even in town gardens. As is but natural with so vast a genus, soil and situations vary somewhat with different kinds. Most of them will thrive in any ordinary garden soil; and a few will only give of their best when placed in the richest of quarters (though manure coming in actual contact is injurious), with plenty of moisture, as by the side of a stream or lake. In height, too, Irises vary considerably. There are tall and stately species, like *I. pallida*; intermediate ones like *I. sibirica* (Siberian Irises); and yet others, which are only a few inches, such as *I. reticulata*, *I. alata*, and *I. Bakeriana*.



FIG. 133.—*IRIS RETICULATA*.

The genus *Iris* is so vast a one that it is quite impossible in a limited space to deal at all fully with it. It is proposed, therefore, to call attention to some of the choicer kinds in each section, reserving the enumeration of others for the "Appendix." First as to the Rhizomatous section, of which

the tall Bearded Irises or Flags of our gardens stand out so prominently. Among the most distinct are: *I. germanica* Kharput; *I. aphylla* Madame Chereau; *I. amena* Mrs. G. Darwin and Duc de Nemours; *I. neglecta* Cordelia, Amabilis, and Miss Maggie; *I. pallida* *dalmatica*, Mandralisce, and Queen of May; *I. squalens* Dr. Bernice, Arnois, and Lady Jane; *I. variegata* Alba, Aurea, Gracchus, and Maori King. Then come the Dwarf Bearded group, which are charming for permanent edgings, for massing, or for the rock garden. All are pretty, but especially good are Count Andrassy, Sieberi, and Olbiensis Sulphurea. These grow some 10in. high.

All the Bearded Irises like a fairly dry and sunny position, and are best transplanted as soon after flowering as possible. This should be done every third year, planting only the strongest crowns, which break off from the bulk, and burning the remainder.

Other handsome Rhizomatous Irises are : *I. Monspur*, *I. orientalis*, *I. spuria major*, *I. aurea*, and *I. Monnierii*. These all



FIG. 134.—*IRIS SIBIRICA*.

have large handsome flowers, and are excellent for the ordinary border or for planting by the sides of streams. They attain a height of from 3ft. to 5ft. The Siberian Irises (*I. sibirica*, Fig. 134) are also fine border-plants, and are alike valuable for lakeside planting—a trifle above water-level. Their flowers are

small, graceful, and freely produced upon numerous slender stems, borne well above the grass-like foliage. In height they are from 3 ft. to 5 ft.

Other Irises in this section worthy of note are *I. cristata*, a gem for sunny spots or for the rock garden; *I. unguicularis* (*I. stylosa*), quite hardy, but delighting in a dry, sunny

position, such as under a south wall, or upon sunny banks—a charming winter-flowering species; *I. fatidissima* is another useful species, thriving alike in dry borders, in shade, or in damp places. A highly-prized characteristic of this species are the large scarlet berries, much employed for winter decoration.

Too much can hardly be said in praise of *I. kaempferi* (*I. kaempferi*). Every garden with a damp border, or with a stream, pond, or ditch, should contain this species. It is one of the Japanese sacred flowers, and a special national feast-day and holiday are devoted to the worship of this Iris. There are a host of named varieties, some of the best being: Nitta, Chiyo, Minamobo, and Taira. Also excellent for water-edge planting are *I. versicolor* and its varieties.

Though difficult to grow it would be unfair to leave out altogether in the cold the *Oncocyclus* group of Irises, as it undoubtedly contains many gems, the flowers ranging from bronzy-black to grey and fawn. The secret of their culture lies in giving them a good "baking" in summer, and being allowed to rest immediately after flowering in June until October. Among the best are: *I. susiana* (Fig. 135), *I. Lorteti*, and *I. lupina*.

Of the Bulbous section the Spanish Irises, with their brilliantly-coloured flowers, are the most popular. Strong-flowering bulbs are to be had very cheaply, and nothing is

more valuable for cutting during June than these. Where possible, they should be grown in partial shade; the flowers then last longer than if exposed fully to the sun. Any ordinary garden soil will suit them. Following just after come the English Irises, whose flowers are white, mauve, violet, and rich purple.

Then there are many dainty little species in this section, whose claims must not be overlooked. For instance, *I. reticulata*, with



FIG. 135.—*IRIS SUSIANA.*

strongly violet-scented purple-blue flowers; *I. Bakeriana*; and *I. Histrioides*. These like sandy soil, and are best when grown in frames or in pots in a cold greenhouse. They flower in early spring. For sheltered spots, again, there are such lovely kinds as *I. alata* and *I. a. alba*, as well as *I. persica*.

In using Irises for table decoration they should be cut in the bud state—just as the flowers are bursting; they develop far better in water than on the plants.

As many amateurs like to try their hand at seed-raising, it may be as well to state that some Irises seed more or less freely—*I. germanica*, *I. aurea*, *I. sibirica*, *I. Monnierii*, and many others. The seed should be sown in a cold frame when ripe, and the seedlings potted off into “sixties,” from which they may be transferred to the open ground the following spring.

IXIA.—Though not usually considered hardy, these bulbs may at any rate be cultivated in a light, well drained soil in the south and west. They are best planted in December and January, inserting the bulbs 4 in. deep in raised sunny beds sheltered from winds. The bulbs should be surrounded with plenty of sharp sand, and the beds be covered with light litter. They may be expected to blossom in summer, and when ripe should again be lifted and stored until planting time. There is an excellent colour range. Propagated by offsets. *I. viridiflora* (Fig. 136) is a most uncommon plant, being green, spotted near the centre. For list of varieties, see end of this Chapter.

IXIOLIRION.—Like the Ixias, these bulbs are not quite hardy enough to endure the rigours of our climate, and it is only in favourable soils and sites that their culture should be attempted. *I. montanum* (*I. tataricum* var.) is the kind usually cultivated, and when it can be induced to flower, its large Lily-like blossoms (Fig. 137) and neat foliage well repay any trouble that may be incurred in protecting it early in the season. A well-drained south border, and a light loam, will be essential to success. The bulbs should be planted in autumn.

KNIPHOFIA (Tritoma) (Flame Flower, Red-Hot Poker, Torch Lily).—Bulbous plants of the showiest description, and exceedingly



FIG. 136.—IXIA
VIRIDIFLORA.

well known by reason of their fancied resemblance to a red-hot poker. In catalogues they are usually classed as *Tritomas*; but under whatever name found, they are so decorative that their merits should be known, as frequently they are the brightest flowers in an autumn garden. They are not, however, exclusively autumn plants, for some desirable species (*K. caulescens* and

K. Rooperi, about 4ft.) are in beauty in early summer. The former may be described as salmon-red, and the latter as bright red at first, ultimately becoming a nice yellow. Nor are their numerous flowers the only conspicuous feature of these two plants: their foliage is very distinct and bold, and reminds one strongly of that of the Yucca.

Kniphofias may be accommodated in shrubberies and wide borders, on lawns, and also in those delightful old-fashioned beds of perennials still to be met with. The only thing that

can be urged against the plants is that they are not as robust as some of the bulbs already enumerated, and that they need to be protected against severe frosts by covering them with some light mulching material towards the end of October. This is particularly necessary in the less favoured parts of England. A rich well-drained soil is what these bulbs delight in, and they should be planted in spring. Their after-treatment consists in the provision of plenty of water during the growing season, and the assistance of a stimulant when the stems are pushing. Propagation is usually effected by division in spring, but some species it is necessary to propagate by suckers which may be induced to push by subjecting the plant to a severe cutting after the flower-spikes have gone over. The beautiful *K. caulescens* should be treated in this way.

In height *Kniphofias* vary between 3ft. and 5ft. A few of the most useful kinds, other than those already named, are: *K. aloides* (*Tritoma Uvaria*), the commonest species, but by no means the least desirable. There are many forms of it, the best being *grandis*, Fig. 138 (5ft.), *nobilis* (5ft.), and *Saundersii* (5ft.). Distinct and beautiful are *K. Burchellii* (3ft.); *K. corallina superba*, a very brilliant scarlet, and of dwarf habit (2ft.); *K. Macowanii*, soft pink, and very dwarf (1½ft.); *K. Nelsoni*, scarlet,



FIG. 137.—*IXOLIRION MONTANUM*.

of various shades (2ft.), one of the newest; *K. sarmentosa*, a combination of red and yellow (3ft. to 4ft.); and *K. foliosa*, bright yellow, or tinged with red, with a dense raceme 1ft. long, and with leaves in a dense basal rosette (3ft.). This last is a robust kind, and is the same plant as *K. Quartintiana*.

Besides the species enumerated, there have been introduced some lovely hybrids, all worthy the attention of the cultivator.



FIG. 138.—*KNIPHOFIA ALOIDES GRANDIS.*

Some of the best are Obelisk, deep yellow; Star of Baden-Baden, bronzy-yellow; Lachesis, deep yellow; Triumph, orange; and Citrina, soft yellow.

LEUCOIUM (Snowflake).—A small but pretty genus of bulbs. Four species are hardy enough for the outdoor garden: *L. vernum*, white with green spots, flowering in spring; *L. pulchellum*, white with green tips, appearing a little later;

L. aestivum, white, flowering in early summer; and *L. autumnale*. This last is a gem. It should be planted in August in sharp sand, and in a shady position. The blossoms forcibly remind one of the Snowdrop, to which, indeed, the plants are closely related. The flowers are, moreover, pleasantly fragrant. These bulbs may be accommodated in the mixed border, and should be planted in good bold groups. For the edges of shrubberies, also, they are useful, especially if partial shade is afforded in the case of *L. aestivum*. A light and good soil should always be provided. These bulbs soon establish themselves. *L. vernum* should not be disturbed unless absolutely necessary, and then it should be planted at once. In grass it is a gem.

LILIUM.—To this genus belong the true Lilies, a name which has been popularly bestowed upon individual species

of many genera. For decorative value, colour-range, stateliness yet gracefulness of habit, and fragrance, there are no bulbous plants that can compare with the Lilies proper. They extend over a wide geographical area, and, as hinted elsewhere, they naturally thrive under very varied conditions as regards soil. Taking the border kinds generally, however, they may be truly said to flourish in any ordinary fairly rich, well-drained soil, if they are planted deep enough (4in. to 6in.), and at the correct time. No bulbs deteriorate more quickly than do the Lilies, and therefore the sooner they are inserted after being purchased,

or after being lifted for renovating borders or beds, the better. Of late years the Lily disease has told heavily against the plants, and especially *L. candidum*, which, though one of our hardiest border kinds, has suffered terribly from the scourge. Reference has already been made to one means of dealing with infected bulbs. Another way, which is said to give excellent results, is to cover the bulbs for a day in flowers of sulphur, taking care that the powder gets well between the scales. Autumn is the best time to plant, and, if possible, home-grown bulbs should be purchased from dealers of repute, as such

FIG. 130.—LILIMUM CANDIDUM.

take great pains to put on the market only what is likely to enhance their reputation.

There are numerous ways in which Lilies may be grown to advantage, and the shrubbery border offers one of the best



positions. The shrubs give just the slight protection they require, and if mulched in dry seasons with manure, this is all the attention they need. Towards the end of autumn light litter may be placed over the tenderer kinds in the open border, for it is not every amateur who has garden enough to devote to a shrubbery, and the Lily should be always represented.

By botanists the genus is sub-divided into several groups, that known as Martagon containing some of the hardiest species and varieties for the borders; these vary alike as to height and colour. *L. canadense* is one of the peat-loving species, thriving well where it can be afforded some slight shade, as amongst Rhododendrons. When planting it will be found a good plan to cover the bulbs with sharp sand. The flowers are usually orange or red, elegantly spotted with brown.

L. Martagon is the distinct Turk's Cap, the white variety being most esteemed: 3ft. to 4ft. *L. Szovitsianum (monodelphum)* is another distinct species, bearing yellow flowers, dotted with brown, but showing plenty of variation. A deep and somewhat sandy loam is the soil for it; but the cultivator must not be disappointed if it does not flower for a year or two. With this species in particular home grown bulbs are a decided advantage: 3ft. to 4ft. *L. Humboldtii* is a truly handsome Lily, with deep orange purple spotted flowers, gracefully drooping: 4ft. to 6ft. *L. auratum* is one of the most popular of Lilies, and justly so: its size, the variety in which it is found, and its handsome flowers, make it one of the most attractive flowers of the late summer garden. It is another of those species which thrive in a peat soil, sheltered by shrubs. If planted 6in. deep, it will need nothing more than a mulching in winter, and will continue to flower for years: 2ft. to 4ft. Next to *L. auratum* in popularity is the Madonna Lily (*L. candidum*, Fig. 139), which is grown by everybody, and whose fragrance is waited from cottage-garden or from mansion pleasure ground: 3ft.

Other desirable border kinds are: *L. croceum*, a robust species, with showy orange flowers: 4ft. to 6ft. *L. Brownii*, with trumpet-shaped flowers, pure white inside, reddish-brown outside: 3ft. *L. bulbiferum*, crimson, very distinct, with the bulbils borne in the axils of the leaves. *L. Thunbergianum* (*L. elegans*, Fig. 140), a very variable species alike as to height and colour, orange red prevailing; these Lilies are most useful for the shrubbery border: 1ft. to 4ft.



FIG. 140.—*LILIUM ELEGANS.*

L. tigrinum (Fig. 141) is an old inhabitant of cottage-gardens, and, on account of its ease of culture and accommodating nature, is always welcome.

L. t. splendens is an improvement upon the type; 3ft. to 5ft. *L. pardalinum* is a robust species, with bright orange-red flowers, spotted with purple. This is another kind which is best covered with sand at planting time. There are many forms met with in cultivation, all delighting in a liberal fare, that known as *minor* being very distinct; 3ft. to 7ft. Another good

kind is *L. chalcedonicum* (the true scarlet Turk's Cap), with its intense scarlet turban-shaped flowers; 3ft. Several others might be enumerated—*L. rubescens* and *L. Washingtonianum*—and one is tempted to include such beautiful Lilies as *L. speciosum (lancifolium)* *Kretzeri* and *L. tenuifolium*; but unless very favourably situated,

they are likely to disappoint. Nor must *L. rubellum* (Fig. 142) be forgotten, as it promises to prove one of the hardiest for border culture, as it certainly is one of the loveliest. The flowers are a beautiful pink, with showy light yellow anthers, and deliciously fragrant. It, moreover, is an early species, flowering in June. For pot work it can also be recommended. The soil best suited to its requirements is a sandy loam.

Lilies may be propagated in a variety of ways—by seeds, offsets, bulbils, and by scales. This last is a most interesting method, and valuable where it is desired to produce kinds absolutely true.

The usual method is by offsets, which will flower in from three to five years, according to species and treatment.



FIG. 141.—LILIUM TIGRINUM.



FIG. 142.—LILIUM RUBELLUM.

MONTBRETIA.—*See* Tritonia.

MUSCARI (Grape Hyacinth).—Bulbous plants of great value in the outdoor garden, as they are early to flower, easy to cultivate, and bright as to colour. Being all of dwarf habit, they should, when grown in the border, be allotted a front position; but they look best when naturalised on a bank, their bright colours standing out well against the tender greens of spring. The brightest gem in the genus is *M. conicum*, a rich celestial blue, with a delicate fragrance, which latter considerably enhances its value. *M. armeniacum* is a blue of a deeper shade, flowering rather late; while *M. monstrosum* (Feathered Hyacinth), an old garden favourite (purple lilac), *M. Sibiricum* (light blue), and *M. botryoides pallidum grandiflorum* (pearl blue), are all worth growing. Muscari make nice pot plants. The bulbs should be planted in September, and propagation is effected by offsets at the same season.

NARCISSUS.—Just as no summer garden would be considered complete without its Lilies, so no spring garden would be

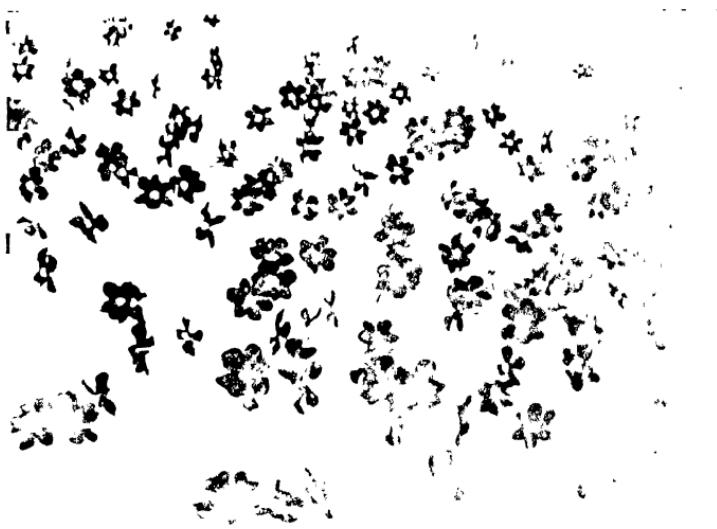


FIG. 143.—NARCISSUS LEEDSII, NATURALISED UNDER TREES.

furnished without its quota of Narcissi. No particular soil or position is required to successfully grow the majority, and all may be enjoyed if but the rudest of contrivances exist to give them shelter; and it is this freedom from cultural complications which constitutes another of their chief charms. They are flowers of the people, and by them have been grown

from the earliest times of which we have records of gardens being kept in this country. As pot plants, too, Narcissi excel, and elsewhere in this volume their adaptability to such a purpose will be considered.

In border or on rockery, in shrubbery or in woodland, they are alike ornamental, and are fit associates for the finest of spring flowers. What a wealth of beauty may be had even in the first months of the year by planting in the mixed borders the earlier Daffodils, the bright Chionodoxas and Scillas, and the Snowdrop! Individually, how different is each; collectively, what a feast to the eye they present! Those who know the Daffodil in its native haunts long to plant other varieties equally adapted

to grassy slopes and stretches of lawns which are strangers to the gardener's scythe or mowing-machine—at least, until the naturalised plants have completed their growth. Nature leads the way, leaving those who appreciate the truly beautiful and informal to follow in her train. Those who can afford to indulge their tastes thus should dibble in the bulbs in late summer as plentifully as they can: and in the spring the grass will be bejewelled with the yellow gems.



FIG. 144.—NARCISSUS BULBOCODIUM.

In the borders the bulbs should be planted with no niggard hand, selecting the earliest opportunity for the operation. There is, however, another thing to be remembered: Narcissi must not come in contact with raw manure. Rather should they be planted in quarters from which, say, some earlier crop has been taken, but in a good loam, and sufficiently deep to be out of the reach of ordinary frosts. Some varieties will grow under the shade of trees, and no more effective way exists of displaying the delicate beauties of, say, *N. albicans*, *Johnstonii* Queen of Spain, Achilles, Von Sion, or J. G. Baker than under lawn trees whose shade is not too intense. Where Narcissi are growing freely in borders or in beds, it is a mistake to disturb them

annually, as do some. Once in three years is often enough unless disease asserts itself, when it will be found an excellent plan to lift them and plant in quite fresh ground, virgin pasture loam if possible, and under the shade of trees. This applies to the whole of the Large Trumpet Daffodils (*Magnicoronati* group), which are such features of our gardens, and whose name is simply legion, also to Incomparabilis, Barrii, early-flowering Poeticus, FIG. 145.—*NARCISSUS BICOLOR HORSFIELDII*. Burbidgei, Backhousei, Leedsii (Fig. 143), Tridymus, and the late-flowering Poeticus.

Besides representatives of the various sections into which botanists have divided the genus, there are a host of small-flowering kinds too fragile to be risked in the mixed border, but whose beauty ought not to be lost. For these a place on the rockery should be assigned, and providing a suitable carpet-plant is provided, they will push up their sweet little flowers before winter's icy grip has released its hold. They should not be disturbed so long as they are 'doing well. In low-lying pockets in the rock garden might be tried *N. Bulbocodium* (Fig. 144) and its varieties, except *monophyllus* (Hoop Petticoat), as well as *N. cyclamineus*, all of which are moisture -

G. 146.—*NARCISSUS MADAME DE GRAAS*.

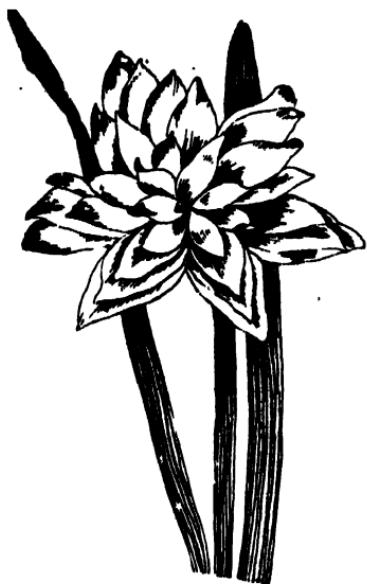


FIG. 147.—*NARCISSUS CAPAX
PLENUS (QUEEN ANNE'S
DAFFODIL).*

White Trumpets, both Single and Double, the following varieties are very typical: Glory of Leiden, Bicolor Horsfieldii (Fig. 145), Madame de Graaf (Fig. 146), and Mrs. J. B. Camm; while in Doubles, Capax Plenus (Queen Anne's Daffodil) (Fig. 147), Plenissimus, and Telamonius Plenus may be mentioned. This group has the crown as long as the perianth divisions. The next group, *Parvicononati* (which includes the white Poet's Narcissus), embraces a lot of popular varieties whose distinguishing characteristic is that the crown is less than half as long as the divisions of the perianth. To this group belong Burbidgei, Poeticus, Little Dirk (Fig. 148), and many another favourite. In the third group, *Mediocoronati*, we have the Chalice-cupped Daffodils, or Star Narcissi, which are characterised by the crown or cup being half as long as the perianth divisions, or in one or two cases as being three-quarters as

lovers; while in other pockets might be inserted *N. nanus*, *N. minimus*, *N. lobularis*, *N. triandrus albus*, and *N. juncifolius*. All will not flourish, though sufficient will to justify the experiment. Many advocate the planting of *N. Bulbocodium monophyllum*, but this, though undoubtedly dainty, is not often a success, even where the best of conditions—a warm, sheltered position, and a rich, light soil—are forthcoming. To appreciate this pretty species at its true worth, it must be grown in a pot and kept in a cool frame or greenhouse, when, if well watered, the exquisite flowers will be produced in January and February. A dozen bulbs may be accommodated in a 5in. pot.

The *Magnicoronati* are subdivided into Yellow Trumpets, Yellow-and-White Trumpets, and

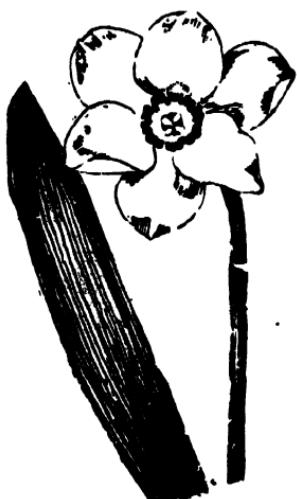


FIG. 148.—*NARCISSUS
LITTLE DIRK.*

long. These flower right up to May. Some good varieties are C. J. Backhouse, Gwyther (Fig. 149), Frank Miles, and Leedsii. A list of varieties for general purposes will be found at the end of this Chapter.

Propagation is usually effected by offsets, which should be separated from the older bulbs, and planted out; and by seeds. The latter process is, however, too long for the man of little leisure to undertake.

NERINE (*Loxanthes*).—Though the commonest species (*N. sarniensis*) is known popularly as the Guernsey Lily, it is not a native of that island. It can only be grown out-of-doors under especially favourable circumstances, as the leaves are produced after the flowers, and, if not protected in some way, they are injured by frost. The bulbs are on the market

in late summer, and they should be planted at once. The blossoms are gorgeous, being of a bright scarlet, and produced in umbels. Some cultivators grow *N. curvifolia Fothergilli* in warm borders, but it is usually wintered indoors. Propagated by offsets at planting time. As a pot plant, *N. sarniensis* excels.

ORNITHOGALUM (Star of Bethlehem).—A few species of this genus deserve to be mentioned, for if they are not showy, they provide gardeners with several good subjects not only for the rockery, the border, and the grass, but also for bare places under trees. They flower in either spring or early summer. *O. nutans* is much prized for cutting, as its silvery-grey colour, shaded with green, blends well with any other flower; it is about 15in. high, and will grow in either shade or sunshine. *O. umbellatum* (true Star of Bethlehem) is another most useful species for under trees or grass, smothering the ground with its lovely white flowers. The plant usually sold as Star of Bethlehem in early spring is *Allium neapolitanum*. Stately kinds, like *O. pyramidalis*, may be used with excellent

FIG. 149.—NARCISSUS GWYTHER.



effect among Andromedas and similar shrubs. The flowers are snowy white, and are produced in pyramidal spikes 2 ft. to 3 ft. high. These bulbs, which should be planted in late summer, should not be interfered with except for purposes of increase.

PANCRAZIUM (Sea Daffodil).—Only one species of this genus is really hardy, and that in favoured situations, such as advocated for Crinums. Indeed, *P. illyricum* may very well be treated on the lines suggested for the Crinums. Increased by offsets in autumn.

POLYGONATUM (Solomon's Seal).—Allied to the Lily of the Valley is the genus here named, several species of which might



POLYGONATUM

FIG. 150.—POLYGONATUM MULTIFLORUM.

often be used, especially for shady nooks under trees, and for naturalising in woodlands. Indeed, gardeners might well take a lesson from Nature in respect of the adaptability of these plants for the last-named purpose, as at least three species are to be found growing in our woods—*P. verticillatum*, *P. officinale*, and *P. multiflorum* (Fig. 150), the last two having double forms. Though the flowers cannot boast striking colour, they are neat in the extreme, and are, moreover, disposed in such a way that they have a grace which is all their own, and are succeeded by pretty if not showy fruits—usually of a purplish-black. Other good species are *P. roseum*, rose-pink; *P. oppositifolium*, white, ribbed with red; and *P. punctatum*, white, lilac-dotted. There

are several other species, but those named include all that are best in the genus. With the exception of *P. oppositifolium* (which is best given a place in a rockery), all may be successfully grown in shady places, if the soil is fairly good. They should be propagated by division in autumn or spring, or by seeds (which, as noted, are freely produced), sown when ripe. *Polygonatum*s are largely used as pot plants for forcing, *P. variegatum* being very effective.

PUSCHKINIA (*Adamsia*: Striped Squill).—A much-confused genus of liliaceous plants approaching the *Scillas*. The species is valuable on account of its early flowering, and constitutes one of the brightest gems in the spring bulb garden. Given a sunny position, a light, rich soil, and a covering of strawy manure in winter, these charming bulbs will be at their best in April. For rockwork it is also equally as well adapted as for the choicer parts of the mixed border. *P. scilloides* is 4in. high, and bears light blue flowers striped with a darker colour; while the form *compacta* (Fig. 151) has its flowers more thickly produced. *P. libanotica*, of many catalogues, is but a synonym of *P. scilloides*. These bulbs should be planted in autumn, and should be propagated by seed in September, as after four or five years the bulbs usually die, after the manner of *Scilla sibirica*.

RANUNCULUS (Crowfoot).—Elsewhere the Ranunculus has been dealt with as a florists' flower. All that need be added here are the few species and varieties which are suited to the mixed border or the rock garden. Few of them require any special treatment, so long as a rich, porous, fairly-moist soil is provided, allocating them a shady, rather than a sunny position. Well deserving a place in any garden is *R. amplexicaulis*, which, though but 1ft. high, bears large white flowers in May that are highly prized for cutting. The leaves, too, are pretty with their glaucous hue. *R. aconitifolius flore-pleno* (Fair Maids of France) is pretty, its snow-white flowers being produced very abundantly. *R. gramineus* is a magnificent species for either border or rockwork, its shining yellow flowers and silvery-grey foliage forming a beautiful combination. *R. acris flore-pleno* (Bachelors' Buttons) is but a double form of one of our meadow Buttercups, but it is bright and distinct enough to



FIG. 151.—PUSCHKINIA SCILLOIDES COMPACTA.

merit a place in gardens. *R. monspeliacus* is a Buttercup from the Mediterranean, with very large flowers; being only 1ft. high, it is best planted on the rockery. *R. Lyalli*, though generally grown as a cool greenhouse plant, may be successfully treated out of doors if afforded a sheltered position. Its flowers are white, of good substance, and with pretty stamens, and might very well be assigned a position on a rockery, where the conditions suitable to most of the Ranunculus obtain. The planting should be done in late autumn, and if the following spring should be at all dry, the quarters should be given a good soaking. These species should not be disturbed.

SCHIZOSTYLIS Coccinea (Crimson Flag; Kaffir Lily) is a lovely iridaceous subject with bright crimson Gladiolus-like spikes of flower. It is one of those subjects which require to be taken great care of when grown outside, and to receive plenty of attention in the matter of watering. Light soils will not grow this autumn-flowering gem; but a west border and a fairly deep, rich soil will suit it admirably, if a slight protection is given it in winter. In height it grows from 2ft. to 3ft., and the spikes are much valued for cutting. The plants should be inserted in early spring, grown on through summer, and towards autumn potted up for greenhouse decoration during winter. Or again, a frame might be placed over the plants in October, when flowers would be obtainable the following month. For pot work this plant is one of the best that can be named for the season of November. Propagated by division in April.



FIG. 152.—*SCILLA HISPANICA*.

luxuriantly in a warm, sandy soil. It is a gem whose beauty should not be hidden. There are many other species valuable in their way. *S. bifolia*, in one of its numerous varieties (*S. b. taurica* to wit), should always be represented.

SCILLA (Squill).—For beds or borders the Scillas are amongst the hardiest and brightest of spring-flowering subjects. Indeed it would be difficult to point to a brighter flower than *S. sibirica*, which flourishes so

For naturalising, there is nothing better than *S.* the Wood Hyacinth or Bluebell of our copses, and its white and red forms resembling in shape the Lily of the Valley; and *S. hispanica (campanulata)* (Fig. 152) and its white form (*alba*). They are strong growers, and can hardly be too freely planted, especially in grass, while they rank among the very best bulbous subjects for planting under the shade of the larger trees; they flower in late spring. *S. italicica* is another bright-coloured species, flowering in late spring; it is sweetly fragrant. Flowering in summer, are two or three sorts for which room should be found: *S. peruviana* (Fig. 153), *S. p. alba*, which are perfectly hardy, and are handsome border plants in summer; and *S. autumnalis*, purple-blue, flowering in autumn. Scillas make capital pot plants, and are very frequently employed as room plants, the bright flowers of say *sibirica* and *bifolia* being much appreciated in spring.



FIG. 153.—SCILLA PERUVIANA.

Distinct and beautiful, and flowering in summer, are two or three sorts for which room should be found: *S. peruviana* (Fig. 153), *S. p. alba*, which are perfectly hardy, and are handsome border plants in summer; and *S. autumnalis*, purple-blue, flowering in autumn. Scillas make capital pot plants, and are very frequently employed as room plants, the bright flowers of say *sibirica* and *bifolia* being much appreciated in spring.

Hardy Scillas may be planted about 3in. deep in autumn, and are best not interfered with for several years, unless the soil shows signs of exhaustion. With these, as with Crocuses, however, this difficulty is best got over by periodical top-dressings of good manure. Propagated by offsets taken in late summer, or by seeds, the latter, of course, being a somewhat slow process.



FIG. 154.—SISYRINCHIUM GRANDIFLORUM ALBUM.

SISYRINCHIUM (Satin Flower).—A not very popular genus of iridaceous plants, though there are one or two species which have great claims upon the gardener's attention. Those in

commerce are usually grown in the borders or on the rockery, a sandy loam being preferable. *S. grandiflorum* (purple) and *S. g. album* (white) are charming when used in combination, their gracefully-sheathing leaves being light and delicate (Fig. 154). These like a somewhat shaded situation. *S. bermudianum* is of dwarfer growth, and bears violet flowers. The season of flowering is in early summer. They should be planted in October, and are best propagated by division of the roots.

SPARAXIS.—Cape of Good Hope bulbs of exceeding beauty, but, like their relatives the Ixias only to be grown in favoured positions outside. If, however, such can be assigned them, they should undoubtedly be tried. *S. pulcherrima* (now known as *Dierama pulcherrima*) has bell-shaped flowers, numerously disposed on thin, graceful stems, 4ft. to 5ft. high. They vary considerably as to colour, the most striking being striped, and are produced in summer. Propagated by offsets.

STERNBERGIA (Mount Etna Lily).—Hardy bulbs, yet but little known in gardens, though extremely useful. Three or four species are in cultivation, the best known being *S. lutea* (Winter Daffodil; Yellow Star Flower). It is a Crocus-like flower, produced in late autumn, and some good patches brighten up the garden at that season. There is a variety of it (*Fischeriana*) which flowers in spring. Of late years there has been introduced another very handsome kind in *S. macrantha*, bright yellow, flowering in autumn.

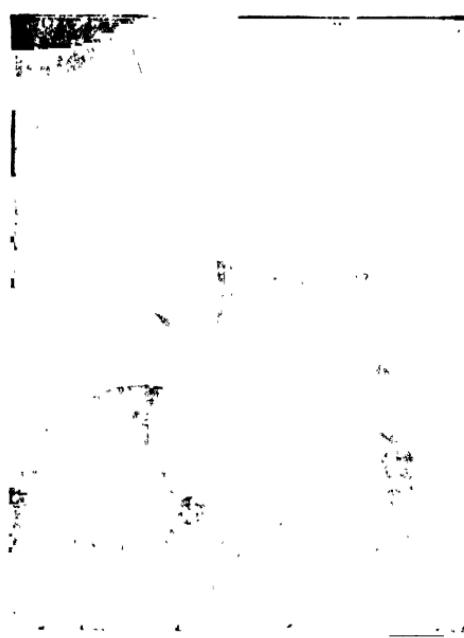


FIG. 155.—TIGRIDIA PAVONIA ALBA.

TIGRIDIA (Tiger Flower).—Another genus of bulbs, several kinds of which should be accommodated in the outdoor garden if

a suitable position can be found them. They delight in sunshine and a light, fairly rich soil. Though gorgeous as to flower, their beauty is short-lived; but the time over which the flowering period extends more than compensates for the ephemeral nature of the individual flowers. It is safer to lift these bulbs



FIG. 150.—VARIETIES OF TRITONIA (MONTBRETIAS).

when thoroughly ripe in October, and store them in a dry, cool place in sand until April, than to leave them in the soil all winter. *T. pavonia* (syn. *T. conchiflora*), yellow, with scarlet markings in cup; *T. p. grandiflora*, brilliant scarlet, with yellow markings; *T. p. alba* (Fig. 155), white, spotted with carmine;

T. p. liliacea, clear rose; and *T. p. immaculata alba*, pure white, are real gems. There is also a species of recent introduction in *T. Pringlei*. It is a Mexican plant of great beauty, the flowers being large and of a glossy scarlet. Still more recent is *T. Van Houttei*, with small bronze-black flowers. A bed of Tigridias in blossom is a sight not likely to be forgotten.

TRILLIUM (Wood Lily).—North American plants of distinct appearance, and valuable subjects for moist, shady nooks in the ordinary garden or for similar positions on rockeries. They flower in spring, and should be freely planted, especially *T. grandiflorum*, snowy-white, set amidst pretty foliage. Another very desirable sort is *T. sessile californicum*, creamy-white, with spotted foliage; while *T. recurvatum*, purple, marbled foliage, and *T. stylosum*, rose-pink, are very pretty. Trilliums should be planted in autumn and not be often disturbed; propagated by division. The petals, calyces, and leaves being arranged in threes have also earned for this genus the popular name of Trinity Flower.



FIG. 157.—*TULIPA KAUFMANNIANA*.

soms are some shade of orange, and valuable for cutting. The Montbretia section of the genus are best planted in autumn, lifted annually, and replanted at once in fresh soil, discarding the old and exhausted roots. This is by no means necessary, as excellent results are frequently obtained by leaving the bulbs undisturbed for two or three years. *T. Pottsii* and the variety *grandiflora* are very decorative; but the best kinds are the garden forms of *T. crocosmiflora* (Fig. 156) (itself of garden origin, being a cross between *T. Pottsii* and *Crocosmia aurea*), which are far and away superior to the type. Varieties to be recommended: Bouquet Parfait, Pluie d'Or, Etoile de Feu, Rayon d'Or, Transcendant, Tigridie, Sulphurea, and Eldorado.

TRITONIA (including *Montbretia*).—In this genus are found some graceful and showy plants flowering in summer. Those usually catalogued as Montbretias are the most popular. The foliage partakes of that of the Gladiolus, and the blos-

Tritonias proper are not adapted for the outdoor garden, though in the South and West of England, *T. crocata* and its varieties would doubtless succeed in a warm part of the garden. They should be planted in October. As a rule, however, they are best given the shelter of a frame laying well in the sun, the bulbs being covered with sand.

TULIPA (Tulip). — The merits of the Tulip as a florists' flower have been discussed in an earlier chapter. There are, however, a number of desirable species which ought to find a place wherever possible.



FIG. 158.—TULIPA ACUMINATA.



FIG. 159.—TULIPA MACROSPELIA.

Of late years a wave of popularity has set in in their favour, and there has been a tendency to plant species rather than florists' varieties. One result of this has been the introduction of several new kinds, which promise to surpass in brilliance of colour and general utility many of the older species. These species should be planted in good bold groups, or in masses where it will not be necessary to lift them to make room for summer occupants. In such

places they may be allowed to remain for three years, provided there is no sign of deterioration in the bulbs. Propagation is effected by offsets. The smaller-growing kinds are admirable for rockwork.

Where there are such a number of kinds worthy of consideration as is the case with Tulip species, it will only be possible to call attention to the best of the group: *T. Batalini*, soft yellow; *T. Clusiana*, white, striped red, and violet base, excellent for a warm part of the rockery; *T. Eichleri*, bright scarlet, bordered with yellow, for sunny spot; *T. Greigi*,

vermilion - red, with dark basal spot, one of the best for a sunny, dry position; *T. Gesneriana spathulata* (*T. G. vera*), rich scarlet, blackish centre; *T. Kolpakowskiana*, a Central Asiatic species of great brilliancy (vermilion-red, blotched at base); *T. Kaufmanniana*, large flowers of a creamy-white, with yellow blotch in centre (Fig. 157); *T. retroflexa*, soft yellow; *T. elegans*, bright red, with yellow eye; *T. saxatilis*, rose-pink, with yellow eye; *T. Orphanidei*, orange - yellow, black centre; *T. Leichtlinii*, coral-pink outside, and white inside; *T. praecox*, crimson, black centre; *T. acuminata*, yellow, streaked with



FIG. 160.—PARROT TULIP.

red, the petals being thread-like (Fig. 158); *T. macrospella* (Fig. 159), shining bright scarlet, with black and yellow centre, fragrant; and *T. vitellina*, pale yellow, as the specific name denotes. From *T. platystigma* the Parrot Tulips (Fig. 160), now so highly esteemed, have been evolved. These, however, in poor soils, are apt to revert to their parent. There are also many forms of what are known as May-flowering Tulips, which ought not to escape the attention of growers. One of the best is Picotee, with its white recurved petals, elegantly margined with rose

VALLOTA PURPUREA (Scarborough Lily).—A beautiful Cape bulb, suited to a warm, sunny border. It should be planted 6in. to 7in. deep in May, and not be disturbed again till absolutely necessary. The flowers are large, brilliant scarlet, and funnel-shaped. Excellent for pots. Propagated by offsets.

ZEPHYRANTHES (Flower of the West Wind; Zephyr Flower).—Though seldom seen out of doors there is one representative of this graceful genus that may be so cultivated. This is *Z. candida*. All that it requires are a sunny spot and a light yet fairly rich soil. The Crocus-like flowers are produced towards the end of summer, and are of a pure white. The bulbs should be planted in late autumn, and are propagated by seeds or by offsets.

The list of additional species and varieties here enumerated may be of service where a wide selection is called for :

Brodiaea

BRIDGESII, purplish - rose, light centre. *CALIFORNICA*, variable as to colour. *CAPITATA ALBA*, pure white. *CONGESTA*, lilac. *PEDUNCULARIS*, porcelain-white. *PURDYI*, rose-purple.

Calochortus

AMENUS, rose. *APICULATUS*, light yel. *FRASERI*, dark blue. *LYONI*, white or rose, spotted black. *MACROCARPUS*, silvery-lilac, dark centie. *PULCELLUS*, yel. *SPLENDENS*, lilac. *S. ATROVIO-LACIFUS*, purple, dark red spot.

Colchicum

AUTUMNALE ALBUM-PLENUM, white, dbl. *BIVONAE*, rosy-lilac. *SIBTHORPII*, rosy-purple, chequered. *SPECIOSUM RUBRUM*, purplish-rose. *VARIEGATUM*, rose-purple, chequered.

Crocus

ASTURIUS, purplish-lilac. *A. ATRO-PURPUREUS*, dark purple. *A. AZUREUS*, blue. *HADRIATICUS*, pure white, and its variety *CHRYSOBELONICUS*. *SALZMANNI*, lilac. *SATIVUS CARTWRIGHTIANUS*, lilac, sc. stigma. *STELLARIS*, orange, dark purple featherings.

Fritillaria

ARMENA, golden-yel. *CITRINA*, green, shaded citron. *DELPHINENSIS*. *BURNATI*, dark brown. *D. MOGRIDGEI*, yel. *PALLIDIFLORA*, pale yel. *PERSICA*, dull brown. *PYRENAICA*, plum-coloured, with yel. inside. *RUTHENICA*, blackish. *WALUJEWI*, deep red inside, silvery-grey outside.

Galanthus

FOSTERI, broad l. and long white fl. *LATIFOLIUS*, broad l. *NIVALIS OCTOBRENSIS*. *PLICATUS*, l. plicate.

Hyacinths

Single Blue—CHARLES DICKENS, CZAR PETER, GRAND LILAS, KING OF THE BLACKS, THE SULTAN, and WILLIAM I.

Double Blue—BLOCKSBERG, CHARLES DICKENS, and LAURENS KOSTER.

Single Red—CARDINAL WISEMAN, CHARLES DICKENS, KING OF THE BELGIANS, LORD DERBY, and SOLFATERRE.

Double Red—KOHINOOR, LORD WELLINGTON, and PRINCESS LOUISE.

Single White—ALBA SUPERBISSIMA, BARONESS VAN TUYL, SNOWBALL, and WHITE PERFECTION.

Double White—EDISON, PRINCE OF WATERLOO, and PRINCESS LOUISE.

Single Yellow—KING OF THE YELLOWS, OBELISK, and PRIMROSE PERFECTION.

Iris—English (*I. Xiphium*)

BLANCHEFLÉUR, white, pink tinge. GRAAF BENTINCK, cr. and white. KING OF THE BLUES. MONT BLANC, pure white. VAINQUEUR, lavender, violet spotted.

— Spanish (*I. Xiphioides*)

AVALANCHE, white, golden-blotted. CATHERINA, deep blue, white, and orange. GOLDEN KING,

Iris—Spanish (I. Xiphioides) (contd.)

deep yel. LEMON QUEEN, light yel. SNOWBALL, pure white. THE MOOR, purple, brown, and orange. THUNDER-BOLT, purple and brown, orange blotch.

— **Bulbous and Tuberous Species**

ASSYRICA, white. ATROFUSCA, dark red and brown, black veinings. ATRO-PURPUREA, dark maroon. BOISSIERI, purple, yel. blotch. CAUCASICA, light yel.; sunny sheltered spots. FLAVISSIMA BLONDVII, light yel. GATESII, creamy - white and rose; robust. HELENÆ, bright lilac and purple, dark blotch and veinings. LONGITANA, shades of blue; sunny sheltered spots. SINDJARENSE, white and deep blue, crested; early spring.

Ixia

AZUREA, blue, violet centre. CONQUEROR, yel., red shadings. CRATEROIDES, rich sc. EMPEROR OF CHINA, deep yel., black centre. ERUBESCENS MAJOR, deep pink, black centre. VULCAN, orange-red, black centre.

Kniphofia

FITZERI, orange-sc. SAUNDERSI, deep red, tipped yel. SULPHURKA, sulphur-yel. TUCKII, bright red, fading to yel.

Lilium

ALEXANDRAE, white; dwarf hybrid. AURATUM PLATYPHYLLUM, a broad-l. richly-spotted variety. A. RUBRO-VITATUM, a red-banded variety of the well-known typical plant. CANADENSE FLAVUM, yel., spotted black. CATESBAEI, orange-sc., with deep cr. spots. CONCOLORA, bright sc., dwarf. C. CORIDION, deep yel., blotched purple. GRAYI, blood-red, spotted maroon. HANSONI, deep yel., spotted cr. HUMBOLDTII BLOOMERIANUM, deep yel., purple tips. JAPONICUM COLCHESTERI, pale yel. inside, deep brown outside.

LONGIFLORUM, pure white, trumpet-shaped. POMPONIUM, bright sc.; early-flowering. SUPERBUM, orange, with brown spots; moisture-loving. TESTACEUM, apricot, sc. anthers; very fragrant.

Muscari

AZUREUM, light blue; very early. COMOSUM, deep blue, in tassel-like heads. HELDREICHII, deep blue, white mouth. MOSCHATUM FLAVUM, yel.; fragrant. NEGLECTUM MAJUS, bluish-black; early.

Narcissus—Trumpet Daffodils

Yellow—CAPTAIN NELSON, GOLDEN NUGGET, GOLDEN SPUR, HENRY IRVING, JOHNSTONI, MAXIMUS, P. R. BARR, SHAKESPEARE, and WILLIE BARR.

White-Winged—EMPERESS, GRANDIS, PRINCEPS, and TUSCAN BONNET.

White and Sulphur—ALBICANS, MARCHIONESS OF LORNE, PRINCESS IDA, and W. P. MILNER.

— **Incomparabilis**

AUTOCRAT, LEEDSII, QUEEN BESS, SIR WATKIN, and STELLA.

— **Barrii**

CONSPICUUS, GENERAL MURRAY, GOLDEN MARY, and ORPHEE.

— **Leedsii**

AGNES BARR, BURBIDGEI, DUCHESS OF BRABANT, FALSTAFF, JOHN BAIN, MINNIE HUME, MRS. LANGTRY, PALMERSTON, and VANESSA.

— **Poeticus**

GRANDIFLORUS, ORNATUS, and MARVEL.

— **Polyanthus**

ADONIA, BAZELMANN MAJOR, CHARLES DICKENS, and SCILLY ISLES WHITE.

CHAPTER VII.

TREES AND SHRUBS.

Decorative Value—Planting and Transplanting—Pruning—Deciduous and Evergreen—Berry-Bearers—Wall Shrubs and Climbers—Weeping Trees and Shrubs—Conifers.

We need scarcely praise trees and shrubs for their beauty, for that is apparent to everyone who glances at the lovely landscapes of these Isles ; yet it is only during recent years that there has been a general awakening to the previously known utility of the trees and shrubs of our own and foreign lands for garden decoration. The tree- and shrub-life of foreign climes has adorned our gardens ever since travellers began to send over things which they considered worthy of use here. Japan, China, New Zealand, the Himalayas, and other temperate lands contribute trees which rank amongst the most beautiful objects of the garden and park, and some of them are becoming so familiar that we are almost led to believe they are indigenous. We cherish trees, too, for their varied forms, some are erect, as the Lombardy Poplar ; others are like the spreading Oak and the purple-leaved Beech ; while the Willow touches the water's surface with its slender branches. a delightful variety indeed, and indispensable in the well-planted garden.

A hundred shrubs also are at hand to embellish the English garden ; shrubs of beauty in some form, whether it be their

flowers in spring and summer, or their foliage in autumn, when Nature paints them with crimson, brown, yellow, and other rich tints. We may select from among the ornamental Plums, Deutzias, Mock Oranges, the sea-loving Escallonias, Cytisus, Berberis, Diervillas, Olearias, Spiræas, Kalmias, Azaleas, and many others, the individual requirements of which we have considered under their proper headings. But variety is useless if good taste is wanting. A common shrubbery is usually a place in which beautiful things are crowded together without reason, throttling each other in their endeavours to reveal their true characters. The cultivator's aim should be to let everything in the garden tell its own tale, and he should never forget that in bold grouping the most artistic picture is secured. It is colour-effect that the planter should most think of, avoiding unpleasant contrasts. We have often wondered that the majority of gardeners and others have never dipped more deeply into the rich store-house of trees and shrubs, but have confined themselves to a few kinds, which one wearies of because so frequently repeated. One misses the variety that a good selection gives, not only in form, but also in colouring, from the silvery-grey of the Willow, through shades of green, to even the deepest purple ; while, in the form of the leaf, we see the same wonderful range.

Amongst deciduous kinds for winter effect we would specially mention the yellow-stemmed Willows and Ash, the red-barked *Cornus*, Willow, and Berberis, the silver-barked Birch, *Rubus* (Bramble), and in a less degree the silvery Poplar and the native Sea Buckthorn. The Alders, Willows, and Nuts are also effective, because of the freedom with which their elegant catkins are borne on the leafless branches.

Of trees and shrubs that blossom during the winter the following are specially nefititious : A good-sized plant of *Chimonanthus fragrans* (Winter Sweet), with its deliciously-scented blossoms, is always welcome in December ; while the elegant and pendulous catkins of *Garrya elliptica*, borne at the tips of the evergreen shoots, the fragrant *Lonicera Standishii*, *Arbutus* (Strawberry Tree) of sorts, and the naked-flowered Jasmine (*Jasminum nudiflorum*) are of great value at this season. The deciduous Daphne (*D. Mezereum*), with its white- and pink-flowered varieties, *Hamamelis arborea* (Japanese Witch' Hazel), *Viburnum Tinus* (*Laurustinus*), the white- and pink-blossomed Heaths (*Erica carnea* and *E. c. alba*), as well as *Berberis*

japonica, are too precious to pass by unnoticed. These are followed by a couple of exceptionally free-flowering Rhododendrons, viz., *R. dauricum* and *R. præcox*. *Prunus Davidiana*, one of the most charming of early spring-flowering trees, is generally in blossom about the middle of February. Although not showy the clusters of small yellow flowers of *Cornus mas* (Cornelian Cherry) are effective, especially if a suitable background of evergreen shrubs is afforded.

Amongst spring-flowering trees and shrubs are many gems suitable for decorative planting—*Forsythias*, *Pieris* (*Andromeda*), *Nuttallia cerasiformis*, Pyruses, Magnolias (deciduous), the fragrant *Corylopsis spicata*, Almonds, Peaches, Cherries, Plums, Thorns, and Amelanchiers are a few of the spring-flowering treasures.

Some trees and shrubs are conspicuous for the splendid colours assumed by the leaves before they fall off, and in this respect *Quercus coccinea* (Scarlet Oak), *Q. conferta*, *Q. rubra*, Azaleas, *Acer rubrum*, *A. circinatum*, *A. palmatum* varieties, *Rhus typhina*, *R. cotinus*, *R. glabra*, *Berberis Thunbergi*, *B. vulgaris*, *Euonymus atropurpureus*, Viburnums, *Amelanchier canadensis*, *Crataegus punctata*, *C. prunifolia*, *C. coccinea*, *Liquidambar styraciflua*, *Parrotia persica*, *Cornus alba*, *C. florida*, *Styrax obassia*, *Pyrus terminalis*, *Liriodendron tulipifera*, and *Vitis* (including *Ampelopsis*) of sorts, are a few of the most striking.

One of the most delightful groups of hardy trees and shrubs may be composed of berry-bearing kinds, and planters would do well to introduce these more freely into pleasure-grounds, parks, &c. A suitable list will be found further on.

The trees and shrubs hereunder enumerated have been divided into several groups, and the deciduous kinds have been kept separate from the evergreens. Sections on Weeping trees, Berry-bearing kinds, Wall shrubs, &c., may be of service to those requiring trees and shrubs for certain purposes.

Planting.

The subject of planting or transplanting is of great importance to those having anything to do with the cultivation of hardy trees and shrubs, as the success or failure depends in a large degree on the way in which such details are carried out. It should not be forgotten that if a tree or shrub is worth planting, it should be carefully treated. Ground for the reception of ornamental trees should be properly drained, if not

naturally so, and trenched. It must, however, be remembered that trees and shrubs differ as regards the kind of soil most suitable for them. Some are naturally deep-rooting, and others, like the Heath family and its allies, may be taken as examples of surface- or shallow-rooting subjects. Such shrubs as the deciduous Daphnes are best planted as quickly as possible after the fall of the leaf in autumn, as root-action commences soon after Christmas, which would be interfered with if planting were deferred until spring.

Opinions differ greatly as to the best time to transplant trees and shrubs. Some prefer early autumn, some March, and others April and May. We believe, however, in autumn planting, as then the temperature of the ground is higher than is the case either in mid-winter or in early spring, and the trees are enabled to make fresh roots and establish themselves in their new quarters before winter. Besides, they are better able to commence growth in spring without feeling ill effects. Any time between September and March will do so long as the trees are in a condition to be lifted, ordinary care is taken in the operation, and provided, of course, that the ground is in a proper state to receive them.

Planting in dry, windy weather is not advisable, as evaporation then goes on much more rapidly than is the case when the weather is mild and dull. It will therefore be seen that the conditions most favourable for planting are when the atmosphere is damp or moist. It is not a good practice to transplant in mid-winter, as the ground at that period is very cold. Neither should transplanting be done or attempted in frosty weather.

With regard to seedlings that have been growing in seed-heds, or autumn-rooted cuttings, spring will be found the best time for planting these out in nursery rows in soil suited to their requirements. Until well established they should be watered daily.

Evergreens, especially Hollies, Yews, Bays, Portugal Laurels, &c., may be transplanted with safety in April and May. They should always be lifted with good balls of earth, and the roots interfered with as little as possible; but they should never be exposed to drying winds, which injure the small fibrous rootlets. They should not be kept out of the ground longer than is really necessary, and if any of the roots should get bruised, the injured parts should be cut away at once, because if allowed to remain they might decay, and be the means of causing others to die; if

a sharp knife be used in cutting the roots the damaged parts will soon heal over.

In the case of trees which are required to travel long distances, the roots should always be protected from dry, parching winds by means of mats, tiffany, hay, or any such material. Holes for their reception should have been previously prepared, and be larger than the ball of earth attached to the roots, which latter should be spread out carefully in all directions, so that they will be in a position to take up nourishment from all sides; besides, by fixing the trees more securely in the soil, they are better able to withstand boisterous winds. The soil at the base should be loosened, and the distance between the trees will depend on the size, kind, and object for which they are intended. It sometimes happens that the ordinary soil of the garden is not suited to certain kinds of shrubs, in which case the indifferent soil should be taken away and replaced by some favourable to the well-being of the subjects it is intended to plant. The too common mistake of huddling the roots up together should be avoided, and the disadvantages of too deep planting cannot be too strongly condemned. Manure in any shape should never be placed in immediate contact with the roots, as it will do more harm than good; it should be incorporated with the soil.

The importance of regular transplanting in a young state, especially such as belong to the Fir tribe, does not seem to be sufficiently understood, or is not carried out to the extent it should be. It frequently happens that trees get too big or bulky for certain positions, and it becomes necessary to lift some of them, in order to give those that are left more room to develop. If transplanting has not been properly attended to in the early stages, the chances of successfully moving them is considerably minimised unless extra care is taken in the operation.

Trees that are "mop-headed," or top-heavy, should be supported by stakes, and securely tied immediately planting is completed, so as to prevent them from being blown over in windy weather. It is wise, especially if planting be done in the spring, to give a good watering to consolidate the soil about the roots, and if water is applied to the foliage by means of a garden engine or syringe, the trees will be greatly assisted in making fresh roots. In the case of trees that are impatient of disturbance at the root, it is an excellent plan to mulch after transplanting with decaying

leaves, light litter, &c., which not only protects the ground from frost, but prevents the escape of heat and moisture.

Shrubs grown in pots are not a success as a rule, for the reason that the roots are matted together through too close confinement. We have noticed how much more vigorous are shrubs lifted from the open than those turned out of pots, except in the case of delicate kinds that need protection in early life, but such as these should never be planted in the open air unless the situation is peculiarly favourable. Planting from pots may be carried out at almost any season, but that is the only advantage, and this is not a practice for general recommendation.

Pruning.

This is an all-important subject, yet one unfortunately both little understood and neglected. To properly prune the various trees and shrubs several points must be considered, such as habit, health, and purpose for which they are intended ; also if the flowers are produced on the previous or the current year's growth. Site and soil are also important.

In borders that are planted with mixed shrubs pruning is essential to keep the too vigorous growth within bounds, and to both protect and encourage weaker kinds. The shrubbery border should be examined at least twice a year, and not allowed to remain unattended for protracted periods.

In pruning flowering shrubs the object should be to improve their general appearance and to encourage greater freedom in blossom. To accomplish the latter, one must sometimes sacrifice growth, especially if the shrubs have been neglected in the early stages, as like fruit trees they should be carefully attended to whilst young, when it is easy to lay in a good foundation. Old worn-out, sickly, and useless wood should be removed, and young vigorous shoots encouraged.

The subject may very well be discussed under two heads : (1) spring pruning, and (2) summer pruning. The point that troubles many lovers of hardy shrubs is to distinguish between the two sections. Roughly speaking, shrubs whose flowers are produced in winter or spring should be pruned immediately the flowers are over, so that they may be encouraged to make new wood early and thus become matured before winter.

The charming Winter Sweet (*Chimonanthus fragrans*) is a typical example of a winter-flowering shrub. In February the

flowering wood should be cut back to an eye of the old wood, and the worn-out growths removed altogether. *Garrya elliptica* should be pruned in early spring, the object being to encourage vigorous growths, which, if properly ripened, will flower freely. Of Honeysuckles, *Lonicera fragrantissima* and *L. Standishii* should have their old wood thinned out in March. The Winter Jasmine (*Jasminum nudiflorum*) should be attended to about the same time, and if the plant be growing against a wall the main shoots should be secured thereto, and the smaller growths allowed freedom: its effect when in blossom is much prettier than when all the shoots are nailed to the wall.

Portugal Laurels are best pruned in April, and the Holly in March or August, as there is time for the wounds to heal before growth ceases. With *Forsythia suspensa* the weak growths should be cut away, and the strong shoots shortened as soon as the blossoming period is over, as shoots 6ft. in length will result, and carry flowers freely the following spring. The Ever-green *Crataegus Pyracantha* should have its weak growths thinned out in early spring, and vigorous growths from the base laid in to take the place of the old shoots. Clusters of berries will thus be borne at the bottom, as well as at the top of the plant. In the early summer the overcrowded shoots of *Olearia Haastii* should be thinned out, and Mahonias (Barberries) may be treated in the same way at the same time. Rhododendrons do not as a rule require much pruning beyond a thinning out of the overcrowded delicate shoots after flowering is over. The seed-pods should always be removed unless seed is required.

As the flowers of *Cydonia japonica* are borne on short spurs along the old wood in March and April, pruning must be done when necessary in the last-named month, and only the very old wood should be taken away, as a too free use of the knife with this early-flowering shrub robs it of much of its beauty. Deutzias, Cytisus, Genistas, Spiræas, Escallonias, Philadelphus, Ribes (Flowering Currants), Syringas, Loniceras, Wistarias, Viburnums, &c., should have their vigorous shoots shortened, and delicate growths removed after flowering. The knife should be used sparingly with such things as Kalmias, Pieris (Andromeda), Vacciniums, Azaleas, Ledums, &c. The majority of the evergreen ornamental shrubs are best pruned in summer.

Clematises need special attention, as the flowers are produced upon different kinds of wood. The herbaceous sorts, such as

C. diversifolia, *C. recta*, and *C. Davidiana* should be cut down to the ground in autumn, while those belonging to the *Viticella* and *Jackmanni* sections are best pruned to within 9in. of the soil in November. The *Lanuginosa*, *Montana*, and *Florida* types flower from June to October, and these should be pruned in February, removing the whole of the weak, overcrowded shoots, and a part of the old flowering wood.

Certain shrubs are improved by close pruning. *Paulownia imperialis* is a case in point. If the whole of the wood be cut down in the autumn to a few eyes, strong shoots will be thrown up in spring, the most vigorous of which should be selected and the others removed. Treated thus, *P. imperialis* makes a good lawn shrub, planted either singly or in a group. The Golden-leaved Elder is much improved by severe pruning, as its young shoots are of a richer yellow than when left unpruned. Willows, Amorphas, Coluteas (Bladder Sennas), &c., may be kept within bounds by a free use of the knife. The Stag's Horn (*Rhus typhina*) bears pruning well, and if compact plants are desired close pruning is necessary. *Hydrangea paniculata hortensis* (*H. p. grandiflora*) should be pruned in February, and the whole of the previous year's wood cut back to a single eye, as hard pruning is essential if large, well-formed panicles of flowers are desired in autumn. With regard to most of the other Hydrangeas, a thinning out of the shoots will be ample.

Conifers should not be pruned in winter; the best time is spring or summer, as the trees being then in growth the wounds quickly heal. Conifers generally, however, require very little pruning. The Larch and Pine families are, for instance, apt to bleed freely if pruned when in full growth. Conifers should be moulded into shape when young. Such trees as *Cedrus Deodara*, *C. Libani*, and *Tsuga canadensis* (*Abies canadensis*) frequently throw up delicate, pendulous leaders, and are apt to become flat-headed unless the side-growths are shortened when young, and more strength thrown into the principal leader.

Deciduous Trees and Shrubs.

ABELIA CHINENSIS (*A. rupestris*).
Pretty dwarf shrub; sweet-scented, pale pink during August and September; prefers rich well-drained loam and good leaf-mould.

ACANTHOPanax. With deeply-lobed rich green leaves. *A. ricinifolium*, fairly tall tree. *A. spinosum*

(*Aralia pentaphylla*, *Panax spinosum*) and *A. s. variegata*, dwarf shrubs, somewhat tender; rich soil.

ACERS (Maples). Ornamental trees, well adapted for hiding unsightly views. They require plenty of air and room. Flowers mostly greenish-yellow, in racemes, and succeeded by attractive

winged fruits; while the foliage changes in autumn to shades of yellow, orange, and red. *A. macrophyllum*, fast-growing on dry soils. *A. diabolicum* (*A. pulchrum*), free-growing. *A. crataegifolium*, a slender tree. *A. c. Veitchi* has variegated leaves. *A. hyrcanum* (*A. caucasicum*), compact, and of slow growth; fine in autumn. *A. pennsylvanicum* (*A. striatum*), the Snake-barked Maple, has green bark striped with white, and

autumn. *A. pictum rubrum* (*A. colchicum rubrum*) has brownish-red bark and purplish-red foliage, intensifying in colour till the leaves fall in autumn. *A. rubrum* (*A. coccineum*), the Scarlet Maple, is one of the finest of Maples for its autumnal tints. *A. Pseudo-platanus atropurpureum* is very rich in colour. *A. P.-p. Leopoldi* has prettily variegated leaves set on red petioles. *A. P.-p. elegantissimum variegatum*, in spring, has leaves suf-



FIG. 161.—*ACER SACCARINUM*.

grows luxuriantly in dry soils. *A. saccharinum* (Sugar Maple), free-growing; very effective tree in autumn. *A. argutum* is a distinct and elegant tree, and very uncommon. *A. dasycarpum* (Silver Maple) is a beautiful park tree, of fairly rapid growth, and excellent for avenues. *A. circinatum*, a capital tree for dry soils, and brilliant in autumn. *A. monspessulanum* is very ornamental, and thrives in gravelly soils. *A. platanoides rubrum* and *A. p. Schwoedleri* are very effective in

fused with rose-pink on a cream ground, and sometimes irregularly splashed with green; vigorous. *A. Negundo variegatum*, with silver-coloured foliage, is a favourite tree for the villa garden; it succeeds well in dry soils, and does not lose colour in the sun; it may be grown either as a bush, or as a standard, worked on the green-leaved kind. Other varieties are *A. N. elegans*, *A. N. crispum*, and *A. N. laciniatum*. For elegance of habit, colour, and variety of foliage, no

hardy shrubs can compare with the varieties of the dwarf-growing Japanese Maple (*A. palmatum*). They are perfectly hardy, but need shelter from cold winds. All named make splendid pot subjects for conservatory and room decoration, as well as pleasing lawn-trees, and thrive in ordinary well-drained soil. *A. palmatum* (*A. polymorphum*), *A. p. aureum*, *A. p. roseo-marginatum*, *A. p. sanguineum*, *A. p. atropurpureum* (vigorous), *A. p. dissectum* (*A. p. palmatifidum*) and its sub-variety *ornatum*, *A. p. septemlobum*, *A. p. s. elegans*, *A. p. s. laciniatum*, are some of the best.

ÆSCULUS. — *Æ. Hippocastanum* (Horse Chestnut), is a good park and avenue tree, not over-partial to wet soils; a rather rich loam, moderately dry, suiting it admirably. *Æ. H. flore-pleno*, double, is later in flowering. *Æ. carnea* (*Æ. rubicunda*), about 20ft., is valuable in gardens, bright scarlet; while *Æ. c. Briotii* is deep rose, and very floriferous. *Æ. indica* (Indian Horse Chestnut) is a lofty tree, having white flowers blottedched with yellow and red at the base. *Æ. parviflora* (*Pavia macrastachya*), white, is a handsome tree for small gardens. *Æ. lavia* (*Pavia rubra*), Fig. 161, bright red, dwarf and slender; and *Æ. californica* (*Pavia californica*), pale rose, 15ft., are pretty and ornamental.

AILANTUS GLANDULOSA (Tree of Heaven). Tall tree of rapid growth, and having divided deep green leaves, and often 5ft. long; succeeds well in dry soils. May be used with fine effect in sub-tropical gardening if cut down as suggested for *Paulownia imperialis*.

ALNUS (Alders). Specially suitable for damp soils, and for planting near water; their elegant pendulous catkins (Fig. 162) being displayed on the leafless branches. *A. glutinosa aurea* (which does not get burnt by hot suns), *A. g. imperialis*, *A. g. laciniata*, *A. cordifolia*, *A. cordata*, *A. pubescens*, *A. viridis*, and *A. oregona* are useful kinds.

AMELANCHIERS. These are spring-flowering subjects with effective snow-white flowers, and when planted in conjunction with some of the pink-flowered Pyrus, Almonds (Prunuses), or Thorns, produce a pleasing effect.

A. canadensis (*A. Botryapium*; *Mespilus canadensis*) varies from 20ft. to 40ft.; should be increased by layering, as then the plants flower freely when 18in. or 2ft. high, and in such a condition are well adapted for planting in distinct masses. *A. c. oblongifolia*, bushy, is the last of the group to blossom; fine. *A. alnifolia* (Dwarf June Berry), 8ft. or 9ft. high, is valuable for small gardens, being free-flowering, with brilliant-tinted foliage.



FIG. 162.—*ALNUS GLUTINOSA*.

A. vulgaris is also fine. All succeed in ordinary soil.

AMORPHA FRUTICOSA (False Indigo). Grows freely in dry soils, and bears bluish-purple flowers in summer; 6ft. *A. canescens* (Lead-Plant) has grey leaves and dark blue flowers borne in September.

ARALIA SPINOSA (Angelica Tree). Vigorous tree with compound persistent leaves, and small yellowish-

white flowers are produced in late autumn; valuable for public parks and pleasure-grounds. It needs plenty of room, and a moist, rich soil. *A. chinensis* (*Dimorphanthus mandshuricus*; *Aralia mandschurica*)

bears attractive berries, and leaves that die off a rich crimson. *B. Thunbergi*, a dwarf species, has small pendent flowers and tiny pale green leaves, which are brilliantly coloured in autumn;

first-rate for small gardens and for planting in front of taller-growing shrubs. *B. virescens*, *B. concinna*, and *B. angulosa* are also effective.



FIG. 163.—*ARALIA CHINENSIS*.

(Fig. 163) needs a moist, warm soil, and protection from cold winds. It has large bipinnate leaves and creamy-white flowers.

AZALEAS.—See Rhododendrons.

BERBERIS. The Barberries are beautiful when in flower in spring and in autumn, when the foliage assumes shades of crimson, chocolate, and orange, as well as attractive when in fruit in winter. Ordinary soil is suitable. List should contain some of the following: *B. vulgaris foliis-purpureis* grows freely, and is best increased by cuttings, layers, or division, as a great percentage of seedlings revert; planted in masses, and cut down annually, it throws up vigorous shoots with rich purple foliage. *B. v. asperma*, scarlet berries; *B. v. aetnensis*, *B. v. amurensis*, *B. v. fructu-albo*, and *B. v. macrocarpa* are also showy. *B. aristata* grows into a stout bush, with bright yellow flowers succeeded by red berries. *B. sinensis*

needs a moist and free in growth; *B. nigra* (Red Birch) excellent for the margins of lakes and streams; *B. occidentalis* (Black Birch), also delighting in damp soil; *B. populifolia* (*B. acuminata*); and *B. papyrifera* are other desirable tall species. *B. nana*, 3ft.; *B. fruticosa*, 4ft.; both like boggy soils. Birches also grow freely in poor soils.

CESALPINIA JAPONICA (*C. sepiaria*). A shrub for a peaty, well-drained soil and a sunny position. It has soft green leaves, composed of numerous small pinnules, and rich yellow flowers, having red anthers. Useful shrub for massing.

CALOPHACA WOLGARICA (*Colutea wolgarica*). A low-growing shrub, suitable for the front of the shrubbery; the flowers are yellow, pea-shaped, and are succeeded by brownish pods. It may also be worked on the Laburnum, several feet above the ground-line.

CALYCANTHUSES. Shrubs with dull red, deliciously-scented flowers; they thrive best in partial shade, and delight in a rich, moist loam. *C. floridus* (Carolina Allspice), *C. glaucus* (*C. fertilis*), and *C. occidentalis* (*C. macrophyllus*) (deep crimson) are the best species.

asplenifolia (*C. B. laciniata*), *C. B. purpurea*, *C. B. pyramidalis*, *C. caroliniana* (*C. americanus*), and *C. cordata* all deserve attention.

CARYAS. Beautiful park trees, requiring rich soil and plenty of head-room; as they make few fibrous roots, and do not transplant easily, it is a good idea to set the nuts in the places where the plants are to remain. The best kinds are *C. alba*, *C. olivæformis* (*C. angustifolia*), *C. sulcata* (*C. cordiformis*), *C. amara*, and *C. porcina*.

CARYOPTERIS MASTACANTHUS. A pretty shrub, with pale blue flowers

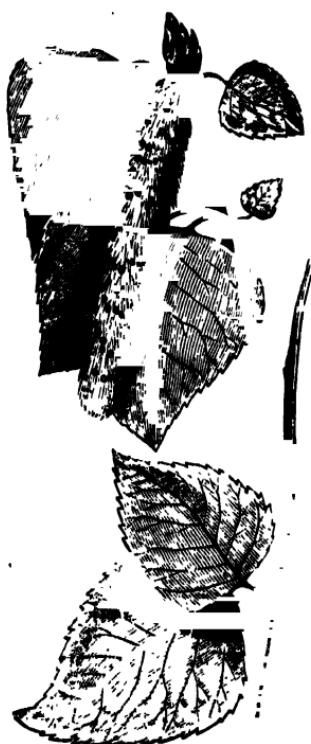


FIG. 164.—*BETULA ALBA*.

CARAGANA ARBORESCENS (Siberian Pea-Tree). Flowers in dry soil and in quite a small state, and succeeds well in smoky districts; its pea-shaped flowers are bright yellow. *C. Redowskii*, *C. frutescens*, *C. microphylla* (*C. altagana*), *C. pygmaea*, *C. spinosa*, and *C. tragacanthoides* are attractive also.

CARPINUS (Hornbeams). Ornamental trees of good growth in ordinary soil. *C. Betulus*, *C. B.*



FIG. 165.—*CARYOPTERIS MASTACANTHUS*.

(Fig. 165) borne in autumn. It delights in full exposure to the sun and in being out of the reach of cold winds.

CASTANEA SATIVA (*C. vesca*), the sweet Spanish Chestnut. A familiar park tree : *albo-marginata*, *aureo-marginata*, and *laciniosa* are less known forms, although ornamental. Other good kinds are *C. dentata* and *C. crenata*. They succeed best in sandy loam.

CATALPAS. Noble trees, beautiful in both foliage and flower. *C. bigonoides* (*C. syringaefolia*), about 30ft., has bold leaves, bronze-tinted, whilst the flowers are white, flushed with puce, and dotted with purple in the yellow throat. *C. b. aurea* has golden-yellow leaves, which do not get burnt by hot suns. *C. cordifolia* (*C. speciosa*) is harder than *C. bigonoides*; it has heart-shaped leaves and large white flowers mottled with purple and yellow in the throat. All flourish in moist soils, and are first-rate lawn trees.



FIG. 166.—*CERCIS SILIQUASTRUM*.

CERCIS SILIQUASTRUM (*Judas Tree*) (Fig. 166). A strange and picturesque dwarf tree, thriving in a rather damp,

rich loam. Flowers rose-coloured, borne in May.

CHIONANTHUS VIRGINICA (Snow Flower, or Fringe Tree). This delights in a moist loam and a shady situation; flowers pure white, fragrant, in May. As it is difficult to increase from cuttings it may be grafted on the Common Ash in March in the open air, or raised from imported seed. It is useful for forcing.

CLEMATIS (non-climbing). Beautiful but little known shrubs, needing a deep, moist, rich soil. *C. aromatic* 5ft., bears small, sweet-scented, violet flowers, in summer and autumn; this species is sometimes labelled *C. carulea odorata*. *C. integrifolia*, showy blue flowers from June to August; *C. de Durand* (a hybrid between the last-named and *C. lanuginosa*), 4ft., large dark violet flowers; *C. Fremontii*, purple drooping flowers; *C. recta* (*C. erecta*), small fragrant white flowers — a gem for the sunny border; *C. heracleafolia* (*C. tubulosa*), broad deep green leaves, and in summer tubular purplish-blue flowers; while *C. h. Davidiana* is still more attractive than the type.

CLERODENDRON TRICHOTOMUM. A handsome autumn-flowering shrub; 8ft. to 10ft. Leaves particularly showy in autumn, flowers white, with a rosy-purple calyx, deliciously scented; September.

Neat bushes, thriving in peaty soil and a sheltered nook, and bearing fragrant white flowers; they are suitable for planting in the front of the shrubbery, as well as by lake or stream-side. *C. alnifolia*, 4ft.; *C. a. tomentosa* (flowering from July to October), *C. a. Sabra*, *C. canescens*, and *C. acuminata*, are all good.

COLUTEA ARBORESCENS (Bladder Senna). Thrives under the same conditions as the Caraganas, and bears yellow pea-shaped flowers, succeeded by soft green bladder-like legumes, which change to a reddish colour. *C. cruenta* (*C. sanguinea*), a quick grower; *C. istria* (*C. microphylla*), and *C. melanocalyx* are also showy.

CORNUS (Dogwoods). Effective dwarf shrubs and small trees, some of which thrive under the shade of tall-

growing trees; some have variegated foliage, others showy flowers, whilst a few have bright red-barked branches.

(*C. Sieboldiana*), and *C. rostrata*, are noteworthy.

COTONEASTERS. See "Berry-bearers."

CRATAEGUS (Thorns). Low-growing trees, for thriving in almost any kind of soil, and in either flower or fruit are highly ornamental. A few of the best kinds are: *C. coccinea*, soft. to 30ft., flowers white produced in May, leaves cordate, rich crimson in autumn, and fruit scarlet, fine; *C. Azarolus*, soft., white flowers, and orange-red fruits; *C. A. Aronia* (*C. Aronia*), white flowers, and large yellow fruit; *C. monogyna*, *C. m. crantonensis*, *C. m. strigata*, *C. m. flexuosa*, *C. m. semperflorens*, *C. m. Reginae*, and *C. m. praecox*, are other showy varieties. In *C. Crus-galli arbutifolia* the foliage turns to a brilliant crimson in autumn. *C. oxyanthoides flore-pleno rosea* is a delightful shrub; as are *C. o. flore-pleno coccinea* (double scarlet), *C. o. lucida*, *C. o. flore-punicea*, *C. o. atrofusca* (weeping). *C. heterophylla* (*C. multiflora*) retains its leaves until early winter, while its crimson fruit is effective. *C. cordata* (*C. acerifolia*) is a handsome species, with a round top and shining green leaves. *C. orientalis* (*C. odoratissima* and *C. flabellata*), soft., is freely branched, and one of the latest to start into growth. *C. pinnatifida*, a choice Thorn, bursts into leaf early in spring, and is conspicuous in autumn, with attractive fruits. *C. parvifolia*, a late-flowering Thorn; prefers partial shade; it has large white blossoms and greenish-yellow persistent fruits. *C. pyrifolia*, *C. Douglasii*, *C. spathulata* (well adapted for small gardens), and *C. tanacetifolia* (late flowering), are other species and varieties of note.

CYTISUS. Useful garden shrubs, very free-flowering, and not particular as to soil. *C. albus* and *C. scoparius* produce masses of colour. *C. s. Andreanus* (*Genista Andreana*) is effective when planted in groups, and is useful for forcing; when grafted on the Laburnum it makes a compact head, and comes into flower in advance of those on their own roots. For open-air planting it will be found to answer better on its own roots. *C. s. pendulus* deserves a place in the rock garden; *C. capitatus*, 3ft. to 4ft.;



FIG. 167.—CORNUS FLORIDA.

C. florida (*Benthamia florida*) (Fig. 167) has pure white flowers in April, and the leaves in autumn change to brown and yellow; sun-lover. *C. f. rubra*, rose-pink. *C. macrophylla* (*C. brachypoda*) has rich green leaves, heavily tinted with orange-red in autumn, and white flowers in summer. *C. Kousa* (*Benthamia japonica*), white flowered; *C. alba* has red stems in winter; *C. a. Spaethi* (*C. sibirica Spaethi*), pale green leaves striped with yellow, and margined with golden-yellow; *C. mas* (Cornelian Cherry), with its tiny yellow flowers in February and March; are all worth a place, the last-named thriving in sandy soil.

CORYLUS AVELLANA ATROPURPUREA (Purple-leaved Nut). A handsome shrub or small tree, with crimson-purple foliage. It may be grown in either bush or standard form. For planting where silver-leaved or pale green shrubs predominate it is valuable. Hard pruning should be practised yearly. *C. colurna* (*C. arborea*), with long showy catkins; *C. heterophylla*

C. biflorus (*C. elongatus* and *C. ratisbonensis*), 4ft.; *C. nigricans* (*Lembotropis nigricans*) are also good. All the above-mentioned, except *albus* and *Andreanus* have yellow flowers. *C. praecox* (*C. purgans* × *C. albus*), a dwarf shrub, with cream-coloured blossoms, should be seen in masses on the grass, and with the lower shoots pegged to the ground; best increased by cuttings. *C. purpureus*, dwarf habit and free, with small purple flowers, should be worked on the Laburnum, 4ft. or 5ft. from the ground, when it forms a pretty weeping shrub; on its own roots it rarely attains more than a few inches. *C. shipkaensis* has pure white flowers, very useful for cutting. *C. austriacus* (*C. banaticus*) forms a neat bush, 2ft. high. *C. Ardoini* is fine for the rock garden, as it is dwarf and very free. *C. keissensis* (*C. Ardoini* × *C. albus*) is a beautiful rock shrub.

DAPHNES.—*D. Mezereum* is of great value in early spring, because of its fragrant reddish-purple flowers. It loves a cool, moist soil and an open position, but it is by no means averse to partial shade. Beautiful effects are obtained with it planted in groups on the grass, using as a carpet such things as *Gaultheria procumbens* and Butcher's Broom. Excellent varieties differing in the colour of the flowers and the time of flowering are *D. M. flor-albo* and *D. M. grandiflora* (*autumnalis*). *D. Genkwa* (*D. Fortunei*) is a beautiful species, bearing sweet-scented lilac-coloured blossoms in early spring; well adapted for forcing into flower for conservatory decoration in winter. *D. alpina* is a pretty species for the rock garden, as it rarely exceeds 2ft.; its small, fragrant, blush flowers are seen in March.

DEUTZIA. Pretty shrubs, usually with white flowers. *D. crenata* (*D. scabra*), *D. c.* Pride of Rochester, *D. parviflora* (the first to flower outside), *D. corymbiflora*, *D. gracilis* (the most generally cultivated, and valuable for forcing), and *D. Lemoinei* (also useful for forcing), are the best of the genus.

DIERVILLAS (Bush Honeysuckles). Dwarf-growing shrubs, easily grown, and effective; planted in beds on the turf, or in front of taller-growing

shrubs in the border, they succeed and look well. They like rich, well-drained soil, and an annual top-dressing of leaf-mould. The thin, flowerless shoots should be removed. A selection should include: *amabilis*, rose-coloured; *van*



FIG. 168.—DIERVILLA VAN HOUTTEI.

Houttei (Fig. 168), carmine, shaded red and mottled white; *Abel Carriere*, rosy-carmine; *Beranger*, rose-purple, yellow throat; *Eva Rathke*, rich purple, almost crimson; *rosea*, rose and white; *Stelzneri*, dark red; and *candida* and *hortensis nivea*, both desirable for forcing. Some kinds are conspicuous for their yellow and variegated foliage, especially those named *amabilis variegata* and *Loymansi aurea*. The latter should be planted in a sunny spot, and never allowed to want for water during dry weather.

ENKIANTHUS. These plants succeed best in a moist, peaty soil and a sheltered situation. *E. campanulatus* has slender branches, small, ovate, oblong serrated leaves, and pink flowers, striped with red. *E. japonicus* is of good habit, and the rich green leaves turn deep orange in autumn. The drooping flowers are pure white.

EUCRYPTIA PINNATIFOLIA (Brush-Bush). A very handsome shrub, 15ft., with glossy pinnate leaves, and pure white flowers with golden stamens. It should be planted in a warm spot so as to insure proper ripening of its wood. Attractive in autumn, when its leaves are shaded with orange. Good drainage is essential, and loam, leaf-mould, and rough peat suit it well.

EUONYMUS. See "Berry-bearers."

EXOCHORDA. The best-known species of this ornamental genus is the Pearl Bush, *E. grandiflora* (*Spiraea grandiflora*), frequently used as a wall-coverer; it is a Chinese plant, flowers pure white, each as large as a two-shilling piece, in May. *E. g. Alberti* is superior to the type.

FAGUS. For pleasure-grounds the Beech (*Fagus sylvatica*) is seen to the best advantage in sandy soil with a calcareous bottom; it also makes a good hedge plant. *F. s. argentea variegata*, leaves broad, green, and finely-striped with white; *F. s. heterophylla* (*F. laciniata*), the fern-leaved variety; *F. s. macrophylla* (*F. latifolia*), with bold leaves, is a vigorous

greens. Beyond the removal of weak and spent-out growths, little pruning is necessary; the best time for this operation is immediately the plants have done blossoming. *F. intermedia*, a garden form between those already



FIG. 169.—*FORSYTHIA SUSPESA.*

purple leaves streaked and

of mention.

FORSYTHIAS. April-flowering shrubs, suitable for many purposes; all have yellow bell-shaped flowers, and are of easy culture. *F. viridissima* is well adapted for margin to the shrubbery. *F. suspensa* (*F. Fortunei* and *F. Sieboldii*) (Fig. 169) is useful for covering pillars and running over verandahs, as well as for hiding unsightly walls. Forsythias should be planted amongst low-growing ever-

FOTHERGILLA ALNIFOLIA (American Witch Alder). A dwarf-growing shrub of rather poor habit, with terminal spikes of white, fragrant flowers in advance of the leaves.

FRAXINUS EXCELSIOR (Ash). It succeeds best in a rich, moist (not too damp) soil. Some of the varieties are handsome, especially the following: *F. e. aurea*, the Golden-barked Ash, well adapted for planting in conjunction with the Silver-stemmed

Birch. *F. c. foliis-argenteis*, the silver-leaved. *F. c. heterophylla* (*F. c. diversifolia* and *F. simplicifolia*) and the narrow-leaved *augustifolia* and *crispa*. *F. americana* (*F. alba*) is of rapid growth, and has a perfectly straight trunk; it thrives in moist soils. *F. a. aucubefolia aurea* is free, and retains its golden-coloured foliage throughout the summer; it is useful for sandy soils. *F. a. foliis argenteis variegatis* has cream and white markings on a green ground. *F. angustifolia*, *F. potamophila*, *F. Richardii*, and *F. quadrangulata* are other distinct kinds.

The Flowering Ashes constitute a valuable group. *F. Ornus* (*Ornus*



FIG. 170.—FRAXINUS ORNUS.

europea, Fig. 170) succeeds wherever the Common Ash thrives; in May and June it bears large plume-like clusters of white flowers; a beautiful lawn-tree. *F. O. latifolia* and *F. O. angustifolia* are choice trees. *F. floribunda* (*Ornus floribunda*) and *F. Mariensis* are later in flower than *F. Ornus* and its varieties, and should be grafted on the Common Ash. *F. longicuspis* and *F. Bungeana* are attractive species.

FUCHSIAS. In the warmer parts of England *F. macrostemma*, *F. globosa*, and *F. Riccartoni* are good kinds for outdoor planting, and very showy in flower.

GAYLUSSACIA FRONDOSA (*Vaccinium frondosum*). A much-branched bush, 4ft., delighting in a moist, peaty soil; it bears dull purple bell-shaped flowers in May and June. *G. dumosa* (*Vaccinium dumosum*), rose-coloured flowers touched with white, grows freely in dry soils, and blossoms in summer.

GENISTAS thrive in soil that suits the *Cytisus*. The flowers are yellow. *G. virgata* (*Spartium virgatum*), 3ft., grows freely and flowers profusely in sandy soil. *G. atnensis* (*Spartium atnense*), the Etna Broom, is a loose-growing shrub, 8ft., whose flowers are succeeded by attractive seed-pods. *G. hispanica* (Spanish Broom) is one of the showiest of the dwarf kinds; it is 10in. to 1ft. in height, and admirably adapted for edgings to beds occupied with permanent shrubs and for covering dry banks and such like places. *G. sagittalis* (*Spartium sagittale*) is useful as an edging to beds or for the rockery. *G. prostrata* and *G. pilosa* deserve a place in the rock garden.

GLEDITSCHIA TRIACANTHOS (Three-thorned Acacia). *G. monosperma* and *G. sinensis* (*G. ferox* and *G. horrida*) are tall, freely-branched trees, having formidable spines and pinnate, rich green leaves. They succeed best in a rich, deep, loamy soil, and are good town trees as well as effective for parks.

GYNNOCLADUS CANADENSIS (Kentucky Coffee Tree). A handsome foliage tree with large bipinnate leaves and spikes of white flowers borne in June. A rich, deep soil is advisable.

HALESIA TETRAPTERA (Silver Bell Tree). An ornamental low-growing tree for a rather moist soil; its small snowdrop-like flowers appear in April and May. *H. corymbosa* (*Pterostyrax corymbosum*), 12ft. high, bears small white flowers suffused with rose-pink; succeeds well against a wall. *H. hispida* (*Pterostyrax hispidum*) (Fig. 171) is beautiful when in flower. *H. diptera* is about 10ft. high; the snowy-white flowers appear later than those of the first-named species.

HALIMODENDRON ARGENTEUM (Salt Tree). A rare and beautiful

shrub; it thrives in sandy soil, and produces pretty pink pea-like flowers in summer. The pinnate leaves are



FIG. 171.—HALESIA HISPIDA.

covered with a white silky down, which gives the plant (especially when worked on the Laburnum) a distinct appearance.

HAMAMELIS ARBOREA (Japanese Witch Hazel). A curious, and in a way beautiful, shrub or small tree, about 15ft. high; it flowers in winter, the long, twisted, golden-yellow petals rising out of the deep claret-coloured calyces. This Witch Hazel succeeds well in sandy soil, although a fibrous loam, mixed with leaf-mould, suits it better. Good drainage is essential. *H. mollis* is of rather slow but neat growth, with broad deep green leaves and flowers composed of rich orange-yellow wavy petals and glossy chocolate-coloured calyces. The Hamamelis here mentioned may be propagated by grafting in February or early March on stocks of the North American Witch Hazel (*H. virginica*), which should have been potted up the

previous spring. Well-ripened scions should be used, placing them in a warm case and syringing over-head lightly twice a week to facilitate new growth.

HEDYSARUM MULTIJUGUM is an uncommon shrub, from 3ft. to 5ft., flowering from early June until the end of August. Its flowers are reddish-purple and pea-shaped. Should be grown in masses and in a sunny, dry soil, and the lower shoots pegged down.

HIBISCUS. Autumn-flowering shrubs. *Hibiscus syriacus* (*Althea frutex*) is best planted in a rather deep, rich soil, in full sun warmth. It seldom exceeds 6ft. in height. The flowers are purplish-violet, cup-shaped. Following are some of the best varieties: *Monstrosa*, blush-white flowers, blotched with crimson; *Celestis* (the first to flower), pale blue, blotched with purple; *Toton Albus*, pure white; and *Painted Lady*, pale rose blotched with deep red. *Duc de Brabant*, *Lilacina Plena*, *Comte de Hainault*, *Lady Stanley*, *Amplissima*, *Leopoldi*, and *Amaranthus* are also good.

HYDRANGEAS are ornamental and easily-grown shrubs, 2ft. to 6ft. *H. hortensis* (*H. japonica*) bears its large heads of flowers in summer. A few of its best varieties are: *stellata*, pale rose with a deeper shade; *Lindleyi* (*H. japonica roseo-alba*); and *Thomas Hogg*, snow-white. Although hardy in sheltered spots, these Hydrangeas are best grown as pot-plants for conservatory decoration. *H. quercifolia* likes a moist, rich soil, and has pure white flowers; it needs a sheltered position. Of late-blossoming kinds, *H. paniculata hortensis* (*H. p. grandiflora*) is the best; and in either rich or poor soil it always bears huge panicles of white flowers, provided the previous year's wood is cut back in February to a couple of eyes. A mulching of leaf-mould or manure in June is beneficial. *H. petiolaris* (*H. scandens*) is of climbing habit, fastening itself to walls by means of its numerous aerial roots; the flowers are greenish-white..

HYPERICUM (St. John's Wort). Useful ornamental shrubs of low growth. Some succeed under the

shade of trees; others are nice rock-garden shrubs, and thrive in poor soils. The flowers of all are of different

red (almost crimson) petioles, and the drooping, small sweet-scented flowers are succeeded by dark fruits.

ITEA VIRGINICA (Virginian Willow) is a North American shrub, suited to a cool, moist soil, and a shady position; flowers white, borne in July and August. A neat, compact bush, about 4 ft.

JAMESIA AMERICANA. A low, much-branched bush, with greyish-green leaves, and in June compact terminal clusters of white flowers. A rather shady position suits it.

JUGLANS (Walnut). These are valuable for ornamental planting, and prized for their nuts, or fruits. The genus is generally represented in parks and pleasure-grounds by *J. regia*, and *J. nigra*, a first-rate town tree. The leaves assume a nice yellow in autumn. *J. regia laciniata* (*J. heterophylla* and *J. filicifolia*) makes a lovely lawn



FIG. 172.—*KERRIA JAPONICA*
FLORE-PLENO.

shades of yellow. *H. calycinum* (Rose of Sharon) succeed well in moist soils and under the drip of trees. *H. uratum* (*H. nepalense*) is a neat-growing species, *H. patulum*, *H. hircinum*, *H. Moserianum* (*H. calycinum patulum* × *patulum*), *H. Androsaemum* (Sweet Amber), *H. Buckleyi* (good for the rock garden), *H. Kalmianum*, *H. prolificum*, and *H. elatum*, are all good kinds.

IDESIA POLYCARPA (*Polycarpa Maximowiczii*). A choice ornamental foliage tree seldom planted in this country. It prefers a rich, moist, well-drained soil, and shelter from east winds is advisable. The heart-shaped, alternate leaves are set on long



FIG. 173.—*LABURNUM ALPINUM*.

tree, and fruits freely. *J. mandshurica* is handsome, vigorous, and distinct, and yields pear-shaped fruits.

KERRIA JAPONICA FLORE-PLENO (Double Jew's Mallow) (Fig. 172). A beautiful yellow-flowered shrub (3ft. to 4ft.) for planting in beds on the grass, in the rock garden, against a wall, or in the open border. *K. j. major* is superior to the first-named. The single-flowered *K. japonica* (*Cochrorus japonicus*) is seldom met with nowadays; it is nevertheless a very fine shrub, with rich yellow flowers. *K. j. foliis variegatis* deserves a place in the rock garden; it has variegated foliage. Any good soil will suit them.

LABURNUM. The common Laburnum (*L. vulgare*) succeeds in dry as

long arching shoots, and delights in a rich, well-drained soil and a sunny position. It usually dies back close to the ground, but throws up shoots from the base in spring. About 5ft.

LEYCESTERIA FORMOSA (Himalayan Honeysuckle). A beautiful shrub, even in poor, hungry soils. The flowers are white (Fig. 174) suffused with purple, and the bracts purplish-crimson. In autumn clusters of highly-coloured seeds are produced, and these are much relished by game.

LIQUIDAMBAR STYRACIFLUA (Sweet Gum Tree) is of medium growth, and well adapted for small pleasure-



FIG. 174.—LEYCESTERIA FORMOSA.

well as in damp soils. *L. v. Carlieri* (*Cytisus Carlieri*), *L. v. foliis aureis* (golden-yellow foliage), *L. alpinum* (*Cytisus alpinus*) (Fig. 173) (the Scotch Laburnum, is generally three weeks later in flowering than *C. vulgare*), *L. a. Parksii*, *L. a. Watereri*, *L. a. grandiflora*, *L. a. autumnalis* (the latest to flower), *L. Adami* (*Cytisus Adami*) (a hybrid between *L. vulgare* and *Cytisus purpureus*), and *L. caramanicum* (*Cytisus caramanicus* and *Podocytisus caramanicus*), are all attractive. The last is only 4ft. high, whereas the others are from 15ft. to 20ft.

LESPEDEZA SIEBOLDI (*Desmodium penduliflorum*). A shrub with bright, rosy-purple, pea-shaped flowers during autumn. It is of slender habit, with

grounds or for avenues. The fragrant leaves are much divided, and in autumn change from deep glossy green to rich purple and crimson, occasionally shaded with orange. This last constitutes its chief attraction, and is found even in shaded situations. It likes a moist soil.

LIRIODENDRON TULIPIFERA (Tulip Tree). Tall tree with an erect trunk, peculiar grey bark, striped with white, broad, three-lobed, smooth green leaves, turning orange-yellow in autumn, and greenish-yellow, fragrant, Tulip-like flowers produced in summer. Of free growth when planted in deep, rich, moist soil. *L. t. aurea* differs in having the central portion of each leaf blotched with yellow.

LONICERA (Honeysuckles) (non-climbers). Of value for the shrubbery, and some bear fragrant flowers. The following are worthy of note : *L. involucrata* (*L. Ledebourii*), 3ft., yellow, suffused with red, June and July; *L. Alberti*, rose-coloured; *L. tomentella*, 10ft., pink, in July; *L. quinquelocularis* (*L. diversifolia*), 5ft., pale yellow, June and July; *L. fragrantissima* and *L. Standishii* (referred to elsewhere as suitable wall-coverers), with small but very fragrant flowers in January and February; *L. caerulea* (*Xylosteum caeruleum*), with greenish-yellow flowers and dark blue berries; *L. tatarica*, 5ft. or 6ft., pink-coloured in May. No particular soil is necessary.

LOROPETALUM CHINENSE. A lovely free-flowering shrub or small tree, 4ft. or 5ft., flowers creamy-white, in shape not unlike those of Hamamelis. It prefers a rich, well-drained soil.

LVONIA PANICULATA (*L. ligustrina*), a small shrub, 4ft. to 10ft., growing freely in peaty soil, flowers white from June to August.

MAGNOLIAS. Magnolias delight in a rich, well-drained soil, and good

should if possible be avoided, as Magnolias do not transplant readily at the fall of the leaf. The best time to move them is in spring, just as growth commences. After planting they should be watered at the roots, and syringed overhead to prevent the wood from shrivelling. *M. conspicua* (Yulan), 20ft., yields pure white, sweet-scented, cup-shaped flowers in March. *M. c. Soulangeana* (a hybrid between *M. conspicua* and *M. oborata*) has flowers rosy-purple without and soft pink within. *M. c. Lennei* (*M. oborata* × *M. conspicua*), a gem, with rosy-purple flowers. *M. Campbellii* has finely-formed rose and white flowers, shaded with crimson on the outside, and borne in advance of the leaves. *M. stellata* (*M. Halleiana*), the dwarfest of all Magnolias, flowers when very young, the blossoms being white and fragrant; it is also the finest Magnolia for pot-culture. There is a pink variety.

M. parviflora, dwarf-growing, pure white, with crimson-red stamens, small plants; *M. Watsoni*, cream-white, fragrant, with yellow stamens and bright-red filaments; *M. hypoleuca*, cream-white, with prominent reddish-purple anthers, fragrant; *M. oborata* (*M. purpurea*, *M. discolor*), dwarf, and purplish sweet-scented; *M. acuminata* (Cucumber Tree), greenish-yellow, bell-shaped, fragrant; *M. glauca*, 12ft., cream-white, sweet-scented, in June and July; *M. triptala* (*M. Umbrella*), white, sweet-scented flowers and deep red fruits; and *M. macrophylla*, 35ft. high, white, and stained with purple in the centre, are all worthy of cultivation.

NEILLIA (Spiraea) OPULIFOLIA. A quick-growing bush (5ft.), producing feathery clusters of white flowers in June. There is a golden-leaved variety, *lutea*, excellent for a sunny spot.

NITTALLIA CERASIFORMIS (Osoberry). A compact, free-growing shrub, with small white flowers, borne freely early in the year.

NYSSA SYLVATICA (*N. multiflora*). A fine park tree, of medium height and rather slow in growth, should be planted extensively for its autumnal effect, its foliage being rich crimson. It thrives best in moist soil.



FIG. 175. — DOUBLE - FLOWERED VARIETY OF PEONIA MOUTAN.

drainage. They need protection from east winds, as they flower early, and sometimes get injured by biting winds and late frosts. Autumn planting

OXYDENDRON ARBOREUM (*Andromeda arborea*, *Lyonia arborea*) produces small white blossoms in September. It is of slow growth, and here attains 15 ft. to 20 ft. It succeeds best in a cool, moist, peaty soil, and flowers in quite a young state; its foliage dies off a rich purple-red.

PÆONIA MOUTAN (Tree Pæony) (Fig. 175). One of the most gorgeous of flowering shrubs, yet far from common. It is a gross-feeding plant, and delights in a deep loam enriched with well-decayed manure. A yearly mulching of manure or leaf-mould should be afforded. Copious supplies of water should be given while growth is progressing, and frequent doses of liquid manure will also greatly assist them. Good drainage is important. The plants should not be disturbed at the root more than is really necessary. The Pæonies must not be planted where the young growths are likely to suffer from late spring frosts, nor must

duce a more charming mixed shrubbery border. For growing in pots, for conservatory decoration, they are also well suited. After flowering is over, they should be encouraged to make fresh growth, and later on plunge out of doors in a sunny spot, and given plenty of water. The following are good varieties, and represent a wide range of colour: Louise Moucheton, soft pink, double; Reine Elizabeth, salmon-red; Splendidissima, white, spotted with lilac; Lactea, white, double; Grandiflora Superba, white, spotted with carmine; Triomphe de Gaud, bright rose; Lord Macartney, crimson, with golden-yellow stamens; Rosea Odorata, rich rose, shaded with salmon in the centre, fragrant; Van Houtte, bright carmine; Purpurea, deep violet purple; Henry Irving, Elizabeth, Don Quixote, Jean de Reszke, and Julius Caesar.

PARROTIA PERSICA (Iron Tree). A small much-branched choice tree, and



FIG. 176.—PAULOWNIA IMPERIALIS.

they have a too-sheltered position, or the wood will not ripen sufficiently to carry flowers. They are lovely subjects for lawns, and few shrubs pro-

delighting in a light sandy soil. It should be included on account of the rich autumnal tints of its foliage. The flowers are small, with crimson-tipped

stamens, and are borne on the leafless branches in February.

PAULOWNIA IMPERIALIS (Fig. 176). A vigorous tree of great beauty, and may be planted with success in ordinary soil, care being taken not to expose it to cold winds. Trained to a single stem, the latter will, if cut down nearly to the base in October, throw up strong shoots 6ft. to 8ft. high the following year. The exceptionally large and handsome pale green leaves give the plant quite a "sub-tropical" appearance. The purplish-violet sweet-scented flowers are borne in late spring. Also well adapted for park decoration.

PHILADELPHUS (Mock Oranges). Easily-accommodated shrubs, with usually fragrant flowers. The common *P. coronarius* is being superseded by some of the more recently-introduced kinds, but deserves a place in the woodland. *P. c. foliis argenteo-variegatis* is happy in a warm soil—not otherwise, or under the shade of trees, as its leaf-colour fades. *P. c. foliis aureis* (golden leaved) is capital for planting in masses in an open sunny position; it succeeds, too, in cold, close soils, but not under the branches of trees. For planting on sandy banks it is as effective as the yellow-leaved Elder, and hot sun is not hurtful. *P. Gordonianus* (Fig. 177), 8ft., has large white, almost scentless flowers, borne about five weeks later than those of *P. coronarius*. *P. grandiflorus* (*P. speciosus*), 6ft. to 10ft., has white sweet-scented flowers; it requires plenty of head-room. *P. g. laxus* (*P. pubescens*), less vigorous in growth, but free. *P. undulatus* is of medium height, neat, and very free. *P. inodorus* is less vigorous than *P. grandiflorus*; the flowers are also smaller, and unscented. *P. Satsumi*, about 6ft. high. *P. Keteleeri* and *flore-pleno* are both worthy of inclusion.

P. microphyllus is suitable for the rock garden, as it rarely exceeds 2½ft. in height. In summer its Myrtle-like leaves are almost hidden by tiny pure white flowers. It has been the fore-runner of some exceedingly free-flowering hybrids raised by M. Lemoine. Some of the best are: Lemoinei, useful for forcing, as well as for outside; Boule d'Argent, semi-

double, fragrant; Gerbe de Neige, sweet-scented, single; and Mont Blanc.



FIG. 177.—PHILADELPHUS GORDONIANUS.

PLATANUS ACERIFOLIA (Plane Tree). The finest of all trees for street planting, as it luxuriates in poor soils and smoky atmospheres. *P. a. Suttneri* has deeply-cut leaves, marbled and striped with cream white on a pale green ground; the variegation is constant in all soils. A fine park tree.

POPULUS (Poplar). Trees of quick growth and happy in nearly all soils. *P. heterophylla*, about 50ft., has heart-shaped leaves, the petioles, as well as the under-surface of which are white. *P. angulata* (Caroline Poplar) is a free-growing species in damp soil. *P. grandidentata*, 50ft., has yellowish leaves, touched with

red in spring. *P. canescens* (*P. albo-tremula*) is conspicuous in spring when carrying its long catkins, its leaves are pale grey; well adapted for waterside planting. *P. alba macrophylla* (*P. Picarti*) is a large-leaved form of the well-known *P. alba* (Abele Tree). *P. a. nivea* (*P. argentea*) has young shoots and the under-surface of the leaves are covered with white tomentum. *P. a. pyramidalis* (*P. bolleana*, *P. Korolkowii*) is well adapted for planting in restricted areas; the young growths and under-sides of the leaves are covered with white. *P. deltoidea aurea* has soft yellow leaves set on bright red petioles, the colour deepening to orange in autumn; the young growths are more or less touched with red; it is of free growth, and the foliage does not burn. *P. ontario variegata* has large and showy leaves, green, shaded with paler green, and heavily mottled with yellow. *P. balsamifera* (Balsam Poplar) is well adapted for shutting out ugly views, and *P. b. candicans* succeeds in poor soils.

PRUNUS. Under this genus are included the Almonds (*Amygdalus*), Peaches (*Persica*), and Cherries (*Cerasus*). All blossom early, and as the flowers appear before the leaves a background of evergreen trees and a position beyond the reach of cold east winds should be chosen. *P. Amygdalus* (*Amygdalus communis*), 20ft. to 30ft., thrives in common soil; its rose-pink flowers give colour in spring; *P. A. flore-pleno* is a lovely double-flowered variety; *P. A. persicoides* (*Persica amygdaloides*) has flowers of much the same in colour, and are valuable for their very early flowering. *P. A. macrocarpa* is one of the best Almonds, its flowers being large and of a pretty shade of pink. *P. Davidiana alba* is the earliest of all the Peaches to flower in the open air, its buds sometimes unfolding in the middle of January, its small pure white flowers are borne along the previous year's wood (often 3ft. in length) with great freedom. *P. (Amygdalus) nana*, 3ft. to 5ft. high, is fine for grouping in beds on the grass; it bears rose-coloured flowers. *P. Persica flore roseo-pleno* and *P. P. flore albo-pleno* are pleasing forms of the Peach tree; they require protec-

tion from north and east winds. *P. Simoni* frequently unfolds its lovely white blossoms in February. *P. Mume* (*P. Myrobalana flore-ruseis*) flowers with the Almonds, and carries a wealth of rose-pink flowers. *P. triloba* (*Amygdalopsis Lindleyi*) is a glorious shrub, with double pink flowers. *P. divaricata* is a useful lawn and park tree, producing its small snow-white blossoms in spring. *P. cerasifera*



FIG. 178.—*PRUNUS JAPONICA*
. *FLORE-PLENO*.

atropurpurea (*P. Pissardi*) is welcome for its rich purple foliage. *P. cerasus semperflorens* (All Saints' Cherry) is a beautiful tree for the lawn; it is of weeping habit, and bears white flowers and red fruits simultaneously during the summer and autumn. Other good kinds are *P. Cerasus* (*Cerasus vulgaris*), *P. C. Rhexi flore-pleno*, *P. C. Avium flore-pleno* (*P. Avium multiplex*), *P. japonica flore-pleno* (*P. sinensis fl.-pl.*, Fig. 178)

(white, in great demand for forcing), *P. chamacerasus* (Siberian Cherry), *P. jacquemontii*, *P. prostrata*, *P. Padus* (Bird Cherry), *Prunus (C.) Pseudocerasus* (useful for small gardens and for forcing), *P. (C.) P.-C.* James H. Veitch, *P. (C.) pennsylvanica*, and *P. serrulata* (*C. Sieboldi*).

PTELIA TRIFOLIATA AUREA. A handsome, free-growing, small tree, with pale yellow leaves; it should be planted in sandy soil, with full exposure to the sun. *P. trifolia* (Hoptree), is effective in autumn when carrying its crops of seeds.

PTEROCARIA CAUCASICA (Caucasian Walnut) succeeds in damp soils, and grows to a height of about 30ft. It is useful for towns, and should be pruned to a single stem when young. *P. stenoptera* and *P. rhoifolia* are very ornamental.

PYRUS. A genus containing many spring-flowering trees and shrubs of great beauty, all being some shades of pink. The freedom with which the flowers are borne, and their simple cultural requirements, place them in the front rank of deciduous-flowering trees. *P. (Malus) floribunda* forms a neat, small tree, with pink flowers and pretty fruits. *P. f. flore-pleno* (*P. Parkmanni*), semi-double. *P. (Malus) Kingi* a dwarf, compact, much-branched tree. *P. sikkimensis* (*P. baccata indica*), *P. Scheideckeri*, *P. spectabilis* (*Malus spectabilis*, *M. sinensis*), a semi-double; *P. Malus*, and its varieties, *coccinea* and *nervosa*; *P. coronaria* (Sweet-scented Crab), with highly-coloured violet-scented fruit; *P. C. fl.-pl.* *P. prunifolia* (Siberian Crab) and its varieties, *xanthocarpa*, *fructu-coccinea*, and *chlorocarpa*; *P. rivularis* (*P. diversifolia*, *P. fusca*), and *P. baccata*, are some of the most ornamental, and all are excellent for planting as single specimens on the lawn.

Some of the White Beams (*P. Aria*) are pleasing foliage trees, growing well in ordinary soil. *P. A. graeca* (*Sorbus graeca*), and *P. A. salicifolia* are conspicuous in autumn when laden with berries. *P. vestita* (*Aria lanata*, *P. nepalensis*), whose leaves are covered with silvery-white tomentum. *P. rotundifolia* (*P. latifolia*), *P. Torminalis* (*Sorbus Torminalis*), *P. Decais-*

neana, and *P. intermedia*, are also desirable.

QUERCUS (Oaks). Some kinds are very showy, and a list of select varieties should include the following: *Q. coccinea*, an Oak with brilliant-coloured foliage in autumn; *Q. pendula Concordia* (*Q. foliis-aureis*), the best of the Yellow-leaved section; *Q. p. heterophylla* (*Q. laciniata*, *Q. dissecta*), and *Q. p. placifolia* (*Q. asplenifolia*), the last-named a handsome kind, with elegantly-cut rich green leaves. *Q. p. purpureascens* (*Q. atropurpurea*), dark purple foliage. *Q. sessiliflora rubicunda* has large leaves tinted with purple. *Q. s. mespiliifolia* has narrow, Willow-like leaves; it succeeds best in moist soil. *Q. rubra* (Red Oak) is another large-leaved kind of great beauty. *Q. conferta* (*Q. pannonica*, *Q. hungarica*), whose deeply-cut rich green leaves, will take on shades of yellow and brown etc. they fall in autumn. *Q. Cerris variegata* is the best of the Silver-leaved Oaks; *Q. laurifolia* is attractive in autumn. *Q. castaneifolia* resembles in foliage the Spanish Chestnut. *Q. dentata* (*Q. Daimyo*) is a fine species, with large leaves.

RHODODENDRONS. During May and June the Azalea group are wrapped in colour of all shades from white to yellow and orange, through pink, rose, and salmon, to scarlet and crimson, whilst the flowers are deliciously scented, and beautiful for cutting and placing in vases for room decoration. Azaleas are perfectly hardy, and thrive in loamy soil, but prefer one that is composed principally of peat and leaf-mould. Lime should be absent from the soil, and good drainage is essential, as they are never happy when water becomes stagnant at the roots. Although amongst the choicest of dwarf shrubs suitable for pleasure-grounds and shrubberies, it is well not to forget that the flowers are sometimes injured by cold winds. To preserve them from injury they may be planted in a colony by themselves, where they will get sufficient sun-heat to ripen the wood properly, and be afforded shelter from biting winds, &c., by tall-growing trees. Azaleas are amongst the most serviceable of hardy shrubs for forcing. Plants are easily raised from seed, but when certain

colours are required, named sorts should be procured. For this reason we give the names of a few good kinds, with the colours added. *R. occidentale* (Californian Azalea), fragrant white, blood-red in autumn; *R. arboreascens*, fragrant red; *R. viscosum* (Clammy Honeysuckle), white and rose-coloured, sweet-scented, it succeeds best in moist soil.

R. calendulacea (one of the parents of the so-called Ghent Azaleas), orange-coloured; *R. nudiflorum* (this, too, has played an important part in

RHODOTYPOS KERRIOIDES (White Kerria). A charming and easily-grown very hardy shrub, bearing pure white flowers, somewhat similar to single Roses.

RHUS. Ornamental shrubs or small trees of simple requirements. In autumn few shrubs are more effective, while the feathery seed-plumes of some are distinct and beautiful. The best kinds are: *R. Cotinus* (Venetian Sumach; Smoke Tree), 5ft. or 6ft. *R. C. atropurpurea*, with richly-



FIG. 179.—RHUS TYPHINA.

the development of the Ghent Azaleas), rose-scented; *R. sinensis*, a hybrid; *R. rhombicum*, rose-pink or purple, one of the first of the group to flower in the open air in spring, and attractive in autumn, its leaves assuming a deep red colour. *R. Rhodora* (*Rhodora canadensis*), purple; *R. Vaseyi*, pale pink to white, flowers when quite small; *R. Schlippenbachii*, soft pink, spotted with crimson; *R. dahuricum*, purplish; *R. dilatatum*, mauve, form a fair selection.

coloured foliage and purple seed-plumes. *R. typhina* (Stag's Horn Sumach) (Fig. 179), a fine lawn shrub, and grows freely in towns. *R. glabra* (*R. coccinea*, *R. elegans*) (*R. g. laciniata*), useful for growing in pots for conservatory decoration, as well as for groups on the lawn. *R. cotinoides*. *R. venenata* (*R. vernix*, *Toxicodendron pinnatum*), well adapted for planting in damp soils; and *R. Toxicodendron* (*R. japonica*), the Poison Oak. Sap of some species is poisonous, and care should be exercised in handling them.

RIBES. The Flowering Currants, with their graceful, pendulous racemes of white, yellow, pink, rose, and crimson flowers, are welcome. No soil or situation seems too bad for them, and they may be planted with success in poor ground. Of late years several hybrids have been obtained, which in point of beauty eclipse the familiar *R. sanguineum*. *R. s. albidum*, *R. s. atrorubens* (deep red), and *R. s. atrosanguineum* represent the best of the red-flowered Currants. *R. Gordonianum* (*R. sanguineum* × *aurum*), also met with under the names of *R. Beatonii* and *R. Loudonii*, *R. speciosum* (*R. fuchsoides*, *R. stamineum*), resembling one of the small-flowered Fuchsias, and usually treated as a wall shrub, are other red kinds. Of yellow-flowered kinds, *R. aureum* (Buffalo Currant), *R. a. praecox*, *R. a. serotinum*, and *R. a. aurantiacum minus* are the best. A group of these latter, with a few plants of *R. sanguineum atro-sanguineum* has a telling effect when in flower. *R. alpinum pumilum aureum* is conspicuous for its golden-yellow foliage, which it retains for the greater part of the growing season.

ROBINIA HISPIDA (Rose Acacia). One of the most delightful of dwarf-flowering trees, thriving well in nearly all soils, especially so when rather dry; the flowers are rose-pink and pea-shaped. Worked on standards several feet high, and planted amongst low-growing shrubs, a fine effect is produced by this shrub when in flower. *R. h. inermis* (*R. macrophylla*) is ornamental, and has large foliage and very fine flowers. *R. neomexicana* (useful for the park and the garden) has pale rose-coloured flowers in autumn. *R. viscosa* (*R. glutinosa*), the Clammy Locust, a beautiful park tree, produces its rose-pink flowers in quite a small state. *R. Pseudacacia* (Locust Tree) is beautiful both in foliage and in flower; many varieties have been raised from it, and the following are some of the best: *Bessoniana*, *aurea* (this should have a sunny spot), *Decaisneana*, *fastigata*, and *sempervirens*.

RUBUS DELICIOSUS is unquestionably the finest ornamental Bramble grown, and deserves a rich, well-

drained soil, and an open sunny spot. Another beautiful kind usually treated as a cool greenhouse plant, but one that thrives out of doors in favoured localities, is *R. phoenicolasius* (Japanese Bramble), a rapid-growing climber, with pale pink flowers and bunches of richly-coloured berries.

SALIX (Willows). For planting in damp ground, such as the margins of lakes, streams, &c., the numerous species and varieties of *Salix* are well adapted. They range from mere shrubs, 1 ft. high, to trees of 80 ft. or so, and as the tall kinds are of quick growth, they are suitable for landscape effect. The leaves are mostly green and grey; in winter the red, yellow, and green stems are effective, and in spring are very pleasing with their elegant catkins that are borne so freely. *S. babylonica* is one of the most beautiful of weeping trees, while the cardinal and yellow-barked Willows add colour to the landscape, especially in winter.

SAMBUCUS (Elders). Amongst these there are some useful ornamental plants, and where shrubs with golden-coloured foliage are desired, *S. nigra foliis-aureis* (Golden Elder) should be noted. The brightest colour is brought out when it is planted in a rather dry soil and on a bank sloping to the south. In order to encourage young and vigorous shoots, hard pruning should be adopted in spring. *S. n. variegata* has its foliage striped with silvery-grey, which colour it unfortunately loses if planted under the shade of tall-growing trees; it is improved by severe pruning.

SHEPHERDIA ARGENTEA. A useful shrub for small gardens. It grows about 15 ft. high, and thrives best in a rich, well-drained soil. Its leaves are narrow and silvery on both sides. The small yellow flowers appear in April, and the bright red fruits in September.

SPARTIUM JUNCEUM (Spanish or Rush Broom). Grows in dry gravelly soils, where many shrubs would only eke out an existence. It produces the best effects when planted in a mass. An abundant and continuous blossomer, and its pea-shaped sweet scented flowers are very conspicuous.

SPIRÆAS. The shrubby Spiræas are valuable dwarf shrubs. All the kinds here mentioned are of easy culture and very showy. Although they will thrive in sandy soil, one composed of good loam and leaf-mould answers best. They do not give satisfaction planted under the shade of tall-growing trees; while, on the other hand, it is unwise to expose

rima, pink; *S. j. Bumalda* (a capital subject for an edging to beds and shrubberies), rose-coloured; *S. j. glabrata* (fine for massing), deep pink; *S. Douglassi*, red; *S. salicifolia*, rose-coloured; *S. arguta* (*S. multiflora alba*), the best all-round white Spiraea grown, pure white; *S. hypericifolia* (Italian May), 5ft., white; *S. cantoniensis* (*S. Reevesiana*), 4ft., white;

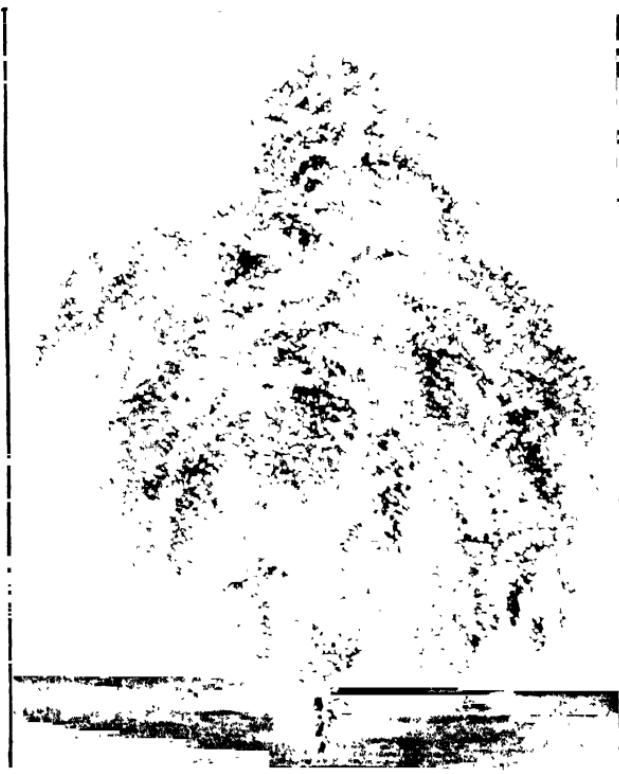


FIG. 180.—FLOWERING SPRAYS OF SPIRÆA DISCOLOR.

them to the full sun, as the flowers are apt to become scorched and to fade early, besides the foliage turning from a healthy green to a dull brown. Some of the more noteworthy are: *S. japonica* Anthony Waterer, deep crimson (the flowers are not affected by the sun to the same extent as are those of some of the other Spiræas); *S. j. alba*, 16in., white; *S. j. rubra-*

S. bella, rose-coloured; *S. Van Houttei* (*S. media* × *S. trilobata*), white; *S. tomentosa*, 4ft., red; *S. media* (*S. confusa*), which is readily forced, pure white; *S. discolor* (*S. aria* *folia*) should be transplanted about every fourth or fifth year, as it then produces a better floral display than when left undisturbed for a longer time, cream-white (Fig. 180); *S.*

Thunbergi (the earliest to flower in the open air), pure white sweet-scented, is a good plant for forcing, and in some positions is sub-evergreen; *S. prunifolia flore-pleno* (early), the pure white flowers being borne abundantly along the previous year's wood, first-rate for walls; *S. Margarita*, soft pink; *S. bullata* (*S. crispifolia*), a fine rock shrub, rose-coloured; *S. decumbens* (also for the rock garden), white flowers; *S. expansa*, rose-pink; *S. Lindleyana* (a capital subject for planting near the verge of the lawn), white; *S. sorbifolia*; *S. pachystachys* (late flowering), pink; *S. semperflorens macrantha*, rose-pink; and *S. triolata*, white.

STACHYURUS PRÆCOX. An early spring-flowering shrub; quite hardy in the southern counties, and growing freely in ordinary garden soil. Not showy, but its greenish-yellow flowers are produced in abundance. 10ft.

STAPHYLEA (Bladder Nut). Stout bushes, that are effective in groups. Their small white flowers are borne in drooping racemes in May. The best two kinds are *S. colchica* and *S. Coulombieri* (*S. pinnata* × *S. colchica*). These thrive in ordinary soil, and delight in an abundance of water during dry weather. Both are excellent for forcing into blossom about Christmas.

STUARTIAS thrive in the open air if planted in rich, well-drained soil, and beyond the reach of biting winds. In very cold counties they should be grown in the conservatory or cold greenhouse. *S. pseudo-camellia* (*S. japonica*, *S. grandiflora*) has white single flowers with yellow stamens, and lovely foliage in autumn; 12ft.

STYRAX JAPONICUM. A beautiful, tall shrub, the pendent white fragrant flowers, having conspicuous yellow stamens, are not large. A rather dry soil and a position not exposed to east winds should be selected for it.

SYRINGAS (Lilacs) are of easy growth in common soil, very floriferous, and attractive when in flower. They are useful for forcing into blossom in the depth of winter. Of single-flowered sorts the following are specially meritorious: *S. Persica* (Persian Lilac), with lilac and white flowers; *Gloire de*

Lorraine, rich rose; *Charles X.*, red-dish-purple; *Marie Legrange*, white, one of the best; *Princess Marie*, pure white, early; *Louis Van Houtte*, deep red, of great size and substance; *Géant des Batailles*, rosy-pink; *Souvenir de Louis Spath*, dark purple; *Ville de Troyes*, deep red; and *Beranger*, bluish-lilac, free. The following are amongst the best double and semi-double varieties: *Madame Lemoine*, white; *La Tour d'Auvergne*, reddish-lilac, deliciously scented, and very free; *Pyramide*, pale lilac; *Leon Simon*, light pink, suffused with mauve; *Alphonse Lavallée*, pale lilac, very free; *Michael Buchner*, pale lilac, margined with rose; and *Virginité*, pink.

TILIA. The Limes are favourite park trees. The common Lime, or Linden Tree (*T. europaea*), is a first-rate avenue tree, and stands hard pruning well. A rich rather moist soil gives the best growth, and it prefers a somewhat sheltered to an exposed situation. *T. argentea* (*T. europaea alba*, *T. tomentosa*) (Silver Lime), 40ft. to 50ft., bears yellowish-white flowers, and the under-surface of its cordate leaves is covered with white pubescence. *T. cordata* (*T. sylvestris*, *T. parvifolia*), very late flowering, succeeds in dry soil better than most of its congeners. *T. americana* (Bass Wood) delights in a cool, moist, rich soil, and is more robust than *T. europaea*. *T. a. pubescens* is a dense-growing variety.

ULMUS (Elms). Several of these are useful for the garden as well as the park. *U. ampestris antarctica aurea* (*U. Rossei*) is a free-growing variety, with rich yellow foliage. *U. c. latifolia variegata* has its foliage mottled and striped with silver and grey. *U. c. viminalis variegata* is very distinct, having small leaves splashed and spotted with white on a pale green ground. Amongst Wych Elms, the golden-leaved variety named *U. montana fastigata aurea* (*U. Dampieri Wedei*) is conspicuous; it is of erect habit, and keeps its colour throughout the growing season. *U. m. macrophylla*, *atropurpurea*, *laciniata*, and *cineraria* deserve to be better known.

VACCINIUMS. Useful free-flowering shrubs that delight in peaty soil. *V. corymbosum* (Swamp Blueberry),

about 7ft. high, bears pale pink flowers in May and June on the previous year's wood. *V. pensylvanicum* (Dwarf Blueberry) has pale rose-coloured flowers, succeeded by sweet bluish-black berries. *V. uliginosum* and *V. stamineum* are also noteworthy.

VIBURNUMS. Summer-flowering shrubs, of simple requirements, but flowering best in an open, sunny spot; they are also very attractive in autumn when in fruit, and are useful for forcing

cream-white, has foliage that is deep crimson in autumn; it also has showy berries. *V. Lentago*, tall, white, succeeded by dark berries in autumn. *V. dentatum* (Arrow-wood) has white flowers, followed by bright blue berries in September. *V. macrocephalum* should have a place beyond the reach of east winds. It succeeds best in rich well-drained soil. It is useful for forcing into flower for conservatory decoration. *V. Opulus sterile* is an easily-grown and well-

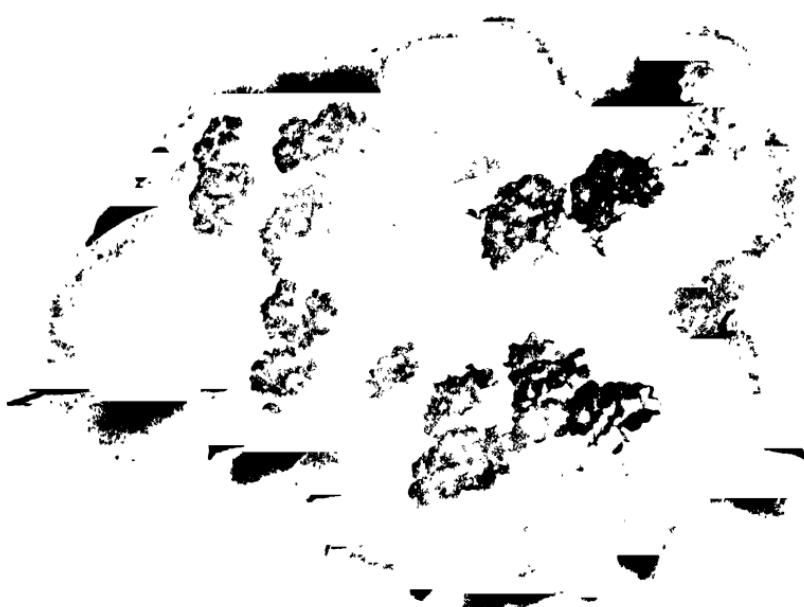


FIG. 181.—VIBURNUM PLICATUM.

into blossom for house decoration during winter. For this purpose they should be lifted in October, planted in pots of suitable size, plunged in the open ground, and the most forward ones brought into heat in December. The syringe should be used freely amongst the top growths, and as the flowers develop the plants should be removed to a colder house before transferring them to the conservatory. *V. Opulus sterile* and *V. plicatum* (Fig. 181), 6ft., are specially useful for this purpose. *V. acerifolium*, 6ft.,

known shrub, with great balls of white flowers. *V. plicatum* (Japanese Snowball Tree) yields the best results when planted in soil composed of equal quantities of lumpy loam and leaf-mould, with good drainage and a sunny position. Well suited for planting in bold groups on the turf.

ZENOIA SPECIOSA (*Andromeda cassinæfolia*, *A. speciosa*), 4ft., is a shrub of much beauty, with white, drooping, Lily of the Valley-like flowers, freely produced in summer on

the old wood. *Z. s. pulverulenta* (*Andromeda dealbata*, *A. pulverulenta*, and *A. speciosa glauca*) is an improved form. Peaty soil is not essential to the proper development of these sadly-neglected shrubs, as they grow freely

in ordinary well-drained soil. Both the plants named are perfectly hardy near London, and are nearly sub-evergreen. They should be increased by cuttings or by layers; the majority of plants raised from seed revert to the type.

Evergreen.

ANDROMEDA POLIFOLIA (Marsh Rosemary), 11ft., delights in peaty soil, and is well adapted for planting in front of the shrubbery. Its shoots are clothed with narrow rich green leaves, and its pinkish-white flowers, tipped with red, are borne freely in drooping racemes from May till the end of September.

ARBUTUS. In the South and West of England the Arbutuses thrive out of doors, but in the North they sometimes get cut in severe winters unless sheltered. They are peat-loving plants, and require plenty of water during the growing season. Perfect drainage is important, and in every case shelter against cold east winds should be provided. *A. Andrachne* (*A. integrifolia*), 15ft., has greenish-white flowers in May, the young bark is tinged with red, and the old bark peels off every spring. *A. Mensiesii* (*A. procera*) produces large panicles of white sweet-scented flowers, while the deep green leaves are of a beautiful glaucous shade on the under-sides. *A. hybrida* (*A. andrachnoides*, *A. photiniefolia*)—a cross between *A. Andrachne* and *A. Unedo*. *A. Unedo rubra* (*A. Croomii*), and *A. U. quercifolia* should always be included in a collection of Arbutuses.

ARUNDINARIA. See Bamboos.

ARUNDO CONSPICUA is an ornamental grass or reed resembling the Pampas Grass. Its long, slightly-serrated leaves droop gracefully, and its long, arching, feathery plumes are thrown up early in the summer, remaining effective until late in the autumn. *A. Donax* (Great Reed), 10ft. to 14ft., a decorative plant for the sides of ponds or on the banks of streams and lakes. It has glaucous green flax-like leaves. *A. D. macrophylla* and *A. D. variegata* are very showy kinds. The latter is a trifle tender, and is well adapted for pots and

tubs for conservatory decoration. Its pale green leaves are striped with white.

Arundos should be planted in rich, well-drained soil, and not exposed to cold, biting winds. They are effective when planted in isolated groups on the outskirts of the lawn, as their characters are there displayed to greater advantage than in the ordinary shrubbery border. They delight in full exposure to the sun, and are benefited by copious supplies of water during the growing season. The best time to transplant and divide them is just before growth commences in spring.

AUCUBAS. See "Berry-Bearers."

AZARAS. See "Berry-Bearers."

BAMBOOS. These include *Arundinaria*, *Bambusa*, and *Phyllostachys*, and are the most beautiful of all hardy ornamental-foliaged shrubs. To produce the best results in this country, a little extra care is necessary. They suffer less from a low temperature than from east and north-east winds in early summer, when growth is tender. It is therefore essential to fix upon a site sheltered from cold winds, especially north and east. Although ordinary soil suits them, they are happier when grown in a rich loam with plenty of cow-manure and a good leaf-mould incorporated. During the growing season, an abundance of water should be given to the roots, for which reason ample drainage should be provided. An annual top-dressing of leaf-mould will increase the vigour of the plants.

If transplanting, or division of the plants, is necessary, this should be done in early summer, when growth is commencing, as they will then grow away freely, without feeling any ill-effects. As soon as planting is completed, a good watering should be given, to settle the soil about the roots, and repeated at intervals.

Bamboos are particularly useful for sub-tropical bedding, and charming as isolated specimens on the fringe of the lawn, as well as for decorating the banks of lakes and streams. They are also excellent for growing in pots for the decoration of cool greenhouses, provided they are never allowed to want for water. Some of the best kinds are *Arundinaria auricoma* (*Bambusa Fortunei aurea*), 4ft.; *A. Fortunei* (*Bambusa Fortunei variegata*) (admirably adapted for planting in the front of the shrubbery, and also

(*Bambusa pumila*) (suited for the rock garden, or for planting in front of dwarf shrubs) are all select species.

Bambusa marmorea (*B. Kan-chiku*) needs a very sheltered situation. *B. tessellata* (*B. Ragamowski*) is very dense in growth, spreads rapidly, and is very hardy. *B. palmata* (*B. Kumasasa*), of dwarf habit, is useful for planting in the shade. *B. pygmaea* is the dwarfest Bamboo in cultivation, and useful for carpeting beds, for edgings, and for the wild garden; it is even bright in winter.

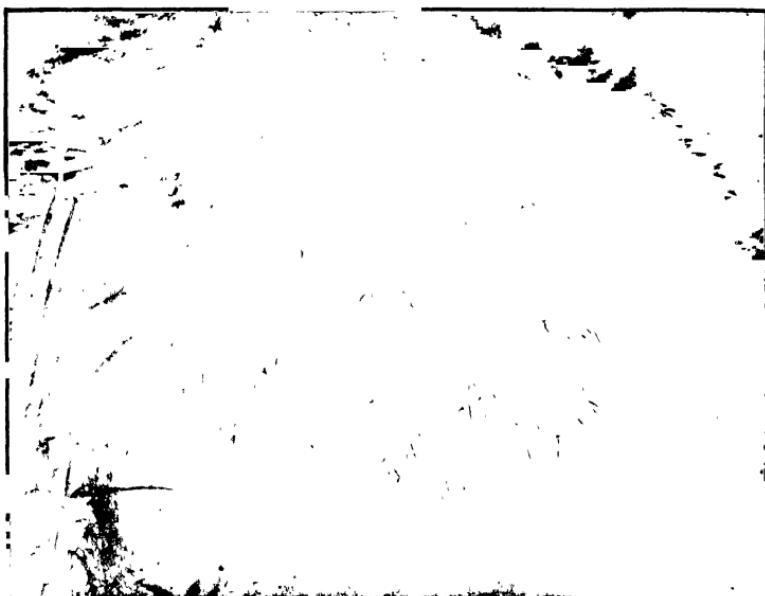


FIG. 182.—ARUNDINARIA JAPONICA (BAMBUSA METAKE).

for growing in pots for the conservatory, but it should be well supplied with water, otherwise the lower foliage assumes a rusty-brown colour, and eventually falls); *A. japonica* (*Bambusa Metake*) (Fig. 182) (in dry soils); *A. Falconeri* (*Thamnochalamus Falconeri*) (an elegant species for sheltered spots); *A. nitida* (*Bambusa Kan-si* (a shade lover); *A. Hindsii* (*Bambusa erecta*); and *A. Simoni* (*Bambusa Simoni*), 15ft.

A. Veitchii (*Bambusa Veitchii*), *A. macroperma* (a pretty kind for planting in the shade), and *A. pumila*

Phyllostachys aurea (*Bambusa aurea*, *B. sterilis*), 12ft. or 14ft., Golden Bamboo, has greenish-yellow stems and narrow pale green leaves. *P. nigra* (*Bambusa nigra*), often 15ft., has blackish-coloured stems and small deep green leaves—a pleasant contrast. *P. viridi-glaucescens* (*Bambusa viridi-glaucescens*), about 15ft., is very effective, and wears a cheerful appearance. *P. Henonis* (*Bambusa Henonis*), the loveliest of the *Phyllostachys*, has short bright green leaves; it flourishes in dry as well as in moist soils. *P. Quilioi* (*Bambusa Mazeli*) and *P. mitis* are

elegant Bamboos, but the latter is rather tender.

BFRBERIS (including Mahonias). Useful, ornamental shrubs of free growth, even in poor soils. Those here mentioned are amongst the showiest of spring shrubs, and all the flowers are some shade of yellow. *B. Darwini*, 4ft. to 10ft., flowers in quite a small state, and fills in well at the bottom, so that it forms a neat, symmetrical bush. As a hedge-plant it can be recommended: it bears the knife well. *B. buxifolia* (*B. dulcis*) in some positions is sub-evergreen. *B. stenophylla* (a hybrid between *B. empetrifolia* and *B. Darwini*) is a gem, but must have plenty of room. *B. empetrifolia* is better suited for the rock garden than for the ordinary shrubbery. *B. Wallichiana* (*B. Jamesoni*, *B. Hookeri*) (Fig. 183), *B. ilicifolia*, and *B. congestiflora hakeoides* also deserve mention, as does *B. nervosa* (*B. glumacea*, *Mahonia glumacea*), a useful shrub for winter effect, and for the rock garden.

B. repens (*Mahonia repens*), very serviceable for edging beds with; *B. Aquifolium* (*Mahonia Aquifolia*), succeeding well in hungry soils and under the drip of trees; *B. A. fascicularis* (*Mahonia fascicularis*); and *B. nepalensis* (*B. Bealei* and *Mahonia nepalensis*) are all noteworthy.

BRUCKENTHALIA SPI-CULIFOLIA. A dwarf neat shrub, with pink bell-shaped flowers, stained with purple at the base. It loves a moist peaty soil, and is suited to the rock garden.

BRYANTHUS ERECTUS (a hybrid between *B. empetriformis* and *Rhodothamnus chamacistus*). One of the most charming of dwarf Heathworts, for a peaty, well-drained soil, and shady site. The flowers are small, rose-pink, and Kalmia-like. Useful as an edging to beds of dwarf-growing American

shrubs, or for a shady nook in the rock garden. *B. empetriformis* (*Mensiesia empetriformis*, *Phyllodoce empetriformis*) and *B. taxifolius* (*Mensiesia caruca*, *Phyllodoce caruca*) should also be grown in the rock garden. They have purplish flowers.

BUDDELLIA (*B. globosa*) (Orange Ball Tree), with its orange flowers, like miniature balls, are produced with great freedom in June and July. No soil seems too poor for it.

BUXI'S. The best known of this genus is our native *B. sempervirens*, a



FIG. 183.—*BERRERIS WALLICHIANA*.

useful, handsome, and always cheerful-looking tree, thriving well under various conditions alike as regards soil and position. In chalky soils, however, the most luxuriant specimens are produced. A capital hedge-plant, which, used with discretion in the shrubbery border, is effective. A well-grown specimen is by no means out of place even on the outskirts of the lawn, and for planting under the drip of trees the Box Tree is specially adapted.

CASSANDRA CALYCOLATA (*Andromeda calyculata*, *Lyonia calyculata*). A neat, low-growing, much-branched shrub, bearing a profusion of small, waxy-white flowers. Useful for planting in masses on the banks of streams or by lake-sides.

CASSINIA FULVIDA (*Diplopappus chrysophyllus*). A stout bush of erect habit, with golden-yellow slender stems, small rich green leaves, covered with golden-yellow tomentum on the under-surface, and terminal panicles of white flowers, borne in autumn and continuing in good condition until the middle of November; a good seaside shrub, and valuable for autumn effect. *C. leptophylla* and *C. Vauvilliersii* are well adapted for the rock garden, or for the front of the shrubbery.

CASTANOPSIS (*Castanea*) **CHRYSOPHYLLA**. A neat-growing shrub or small tree, 10ft., with narrow deep green leaves, covered with a golden powder on the under-surface. A rich, loamy, well-drained soil suits it well.

CERASUS LAURO-CERASUS (Common Laurel). In its proper place this is valuable, and when grown in groups, and allowed freedom, is attractive when in flower. It is also useful for hedge planting, or as a shelter to tender shrubs. Being a gross feeder, it should not be too freely planted in the shrubbery border. The Caucasian and Colchic varieties are ornamental, easily grown, and conspicuous by reason of their handsome glossy green leaves. They are also hardier than the first-named. *C. lusitanica* (*Prunus lusitanica*), well known as the Portugal Laurel, is a fine shrub for planting in pleasure-grounds. It may be grown as a standard as well as in bush form. On account of its neat habit, it has been grown extensively in pots for standing on terraces, in corridors, &c. Although not showy, its dull white flowers are borne very freely in long, pendulous racemes. It requires a rich loamy soil, and copious supplies of water while growth is being made.

CHOISYA TERNATA (Mexican Orange Flower). An exquisite shrub, with Hawthorn-scented flowers. It grows freely in ordinary garden soil if sweet and well-drained. Although

hardy, it is as well to protect it from cold winds, especially in the North, while a sunny spot should be chosen for it to thoroughly ripen the wood. When pruning or thinning of the shoots is necessary, this should be attended to as soon as the flowers are over. For forcing it is also valuable, as its flowers, when cut with long stems, are useful for many purposes.

CISTUSES (Rock Roses). Showy free-flowering shrubs, but unfortunately rather tender. In fact, only in dry and well-drained soils can their real beauty be displayed. Damp, cold, low-lying ground is fatal to



FIG. 184.—*CISTUS LADANIFERUS MACULATUS*.

them. Sloping sunny banks are necessary to promote thorough ripening of the growth, without which a wealth of flowers is impossible. They are very beautiful when in blossom, and succeed in maritime districts. The following are some of the best kinds: *C. monspeliensis*, white; *C. ladaniferus* (Gum Cistus), 4ft., white;

and its spotted variety (*maculatus*) (Fig. 184); *C. villosus*, lilac tinged with purple; *C. corbariensis* (a cross between *C. salicifolius* and *C. populinifolius*) having flowers blotched with yellow in the centre; *C. florentinus* (lovely for the rock garden), white blotched with yellow; and *C. laurifolius*, white.

COTONEASTERS. See "Berry-Bearers."

CRATAEGUS PYRACANTHA. See "Berry-Bearers."

DABECKIA POLIFOLIA (St. Dabeoc's Heath). A dwarf shrub, well adapted for planting in masses in damp soils. It should be planted in the rock garden, also as an edging to beds of dwarf-growing shrubs. Of compact, bushy habit, and spreads rapidly. The flowers are crimson and bell-shaped. Ordinary soil suits this plant, but one composed largely of peat and leaf-mould is best.

DAPHNES. Charming sweet-scented shrubs. Although they thrive well in ordinary soil, they give the best results when planted in a moist, peaty soil, with which has been incorporated a quantity of leaf-mould. Good drainage is of importance. *D. Cneorum* (Garland Flower) is a good carpet-shrub, with neat foliage and fragrant rose-pink flowers, produced sometimes twice a year; it is a capital plant for the rock garden. *D. Blagayana*, which is of spreading habit, and rather slow in growth, carries in spring fragrant cream-white flowers. *D. oleoides* is another early-flowering kind, white, tinged with pink. *D. Laureola* (Spurge Laurel), 4ft., greenish-yellow, will grow in poor soils and under the drip of trees; it loves partial shade.

DAPHNIPHYLLUM GLAUCESCENS. A handsome shrub of compact habit, not unlike certain dwarf Rhododendrons, that is not particular as regards soil, provided suitable drainage is secured. It has rich green leaves, crimson foot-stalks, and brownish-red bark.

ELEAGNUS. These prefer a fairly rich and well-drained soil, and they also flourish in sandy soil where many shrubs merely exist. During the winter months, the variegated kinds in particular are very bright in the garden,

and valuable either for placing as isolated specimens on the lawn, or for adding colour to the shrubbery; they are also useful for covering walls, and are capital dry-weather shrubs, as they do not show ill effects from long drought. Their hardiness is beyond doubt, and if planted in a sunny position, the gold- and silver-leaved kinds produce pretty pictures. As the colour is constant, planters should use them freely; in fact, the variety named *E. pungens aurea* is almost equal in its colouring to some of the fine foliaged Codonums (Crotons).

EMPETRUM NIGRUM (Crowberry). A little shrub of Heath-like appearance, and delighting in moist, peaty soil and shady situations; valuable for the rock



FIG. 185.—*EMPETRUM NIGRUM*.

garden, and as an edging to beds of dwarf shrubs. The pink flowers are borne in May, and are succeeded by small round dark berries (Fig. 185).

ERICAS (Heaths). The colours of the flower vary from pure white, through pink and rose, to deep red. They are of simple culture in peaty soil, but grow and flower freely in loamy soil, provided lime is not present. A

yearly top-dressing of good leaf-mould is very beneficial to the plants. Their value in the rock garden, as well as for edgings to beds of permanent shrubs, is well known. With a careful selection of varieties a display of blossom may be kept up for the greater part of the year. *E. cinerea* (1ft. high), purple, with the varieties *alba*, *rosea*, *atropurpurea*, *atrosanguinea*, *pallida*, and *coccinea*. *E. ciliaris*, 18in., deep pink or crimson; *E. Mackai* (*E. Mackiana*), dwarf, pink; *E. Tetralix*, pale pink; *E. carnea* (Winter Heath), pink, and the white-flowered form *alba*, both useful either for edgings to beds or as undergrowth to such things as Azaleas; *E. stricta*, 5ft., reddish-purple; *E. lusitanica* (*E. codonodes*), white, touched with pink; *E. mediterranea*, pink, and *E. m. hybrida*, pink (this kind is not planted half so freely as its merits entitle it); and *E. vagans* (Cornish Heath), pinkish-white, with its varieties *alba*, *rubra*, and *grandiflora*, embrace about the best kinds. *Hammondi*, *cuprea*, *Alporti*, *coccinea*, *rosa*, *Foxii*, *Searlei*, *alba*, and *lanulosa*, are other good varieties.

ERIOBOTRYA JAPONICA (*Mespilus japonica*). A handsome shrub, with enormous deep green leaves, white flowers, and under glass the pale orange fruits are freely borne. It is a useful and an ornamental wall-shrub.

ESCALLONIAS are referred to under "Wall Shrubs and Climbers"; but *E. Philippiana* does not need this protection. The long pendulous branches are clothed with narrow, pale green leaves, and in June and July with numbers of tiny white flowers. *E. sanguinea*, *E. punctata*, and *E. exoniensis* are all good.

EUCALYPTUS. Of this genus only *E. Gunnii* is hardy, and even this can only be planted in the warmer counties.

EURYBIA. See *Olearia*.

FABIANA IMBRICATA (False Heath) is hardy only in sheltered spots in the open air North of London. It is of somewhat similar habit to the well-known Heather, and in June bears pure white tubular-shaped flowers, which last in condition for several weeks. Ordinary soil will suit it,

especially if a little peat and leaf-mould is incorporated with it. Copious supplies of water should be given during growth.

Gaultheria. See "Berry-Bearers."

GRISELINIA LITTORALIS, planted in rich, well-drained soil, and a sunny spot, is quite hardy in the South and West of England; has rounded thick pale green foliage, and is a good sea-coast shrub.

HELIANTHEMUMS (Sun Roses). Charming plants of dwarf habit, well adapted for the rock garden and as margins to beds of dwarf-growing shrubs. A bank sloping to the south suits them admirably, as they only flower freely when exposed to the sun. They succeed in ordinary soil, which, must, however, be well drained, a cold, stiff, heavy soil being the most unsuitable for them. *H. formosum*, 4ft., yellow, spotted with black; *H. Libanotis*, yellow; *H. polifolium*, white; *H. ocymoides* (*H. algarvense*), 2ft., the clear yellow spotted with purple; and *H. vulgare*, with its beautiful varieties (single and semi-double) varying from white to yellow and orange, and from red to deep crimson, all merit attention.

HYMENANTHERA CRASSIFOLIA. See "Berry-Bearers."

HYPERICUM HOOKERIANUM (*H. oblongifolium*) has deep green leaves, and in August clusters of buttercup-yellow flowers. Well suited for grouping on the turf.

ILEX AQUIFOLIUM (Holly) is a splendid evergreen, and indispensable in ornamental planting. Although it flourishes in the shade, it is perhaps the finest evergreen for planting as isolated specimens in the park, on the outskirts of the lawn, or in any position with full exposure. As a hedge-plant, its value is beyond question, and in this position it forms a dense, impenetrable, and ornamental breakwind. Holly is easily accommodated, and grows freely in all soils unless the position is a damp and boggy one. Groups of Hollies, with a few spring-flowering trees intermixed, such as Almonds, Peaches, Hawthorns, &c., produce a telling effect in March and April. The autumn and winter effect,

when the Holly is carrying its wealth of cheerful coloured berries, is equally effective.

Hollies are best transplanted out between early autumn and late spring (preferably the former), provided the ground is in a suitable condition to receive them. Moist weather should be chosen for the purpose, and care should be exercised in lifting them to have a good ball of soil to the roots, and if the weather is dry, to water freely overhead and at the roots immediately after planting; if the atmosphere should continue dry, and strong winds prevail, the plants should be watered overhead every other day or so.

By frequently transplanting Hollies in a young state they are encouraged to make large quantities of fibrous roots, which are of great value in after years. Hollies can be propagated by seeds, cuttings, layerings, budding, and grafting. The type is raised from seed, which should be gathered as soon as ripe, and mixed with sand, placed in a heap, and kept there until spring or the following autumn. The heap should be turned over every fourth or fifth week, and at the sowing time the seed should be separated from the sand, and sown either in slightly-raised beds 4ft. broad, or in drills, and covered with fine soil. In about two years from the time of sowing, the seedlings will be large enough for transplanting in nursery rows.

The variegated forms are generally increased by budding in summer, and by grafting in spring; but this method is not altogether necessary, or even advisable, as cuttings root freely if young, well-ripened pieces of the current year's growth are taken off in August and inserted in a sandy bed on a sheltered border, and covered with handlights or frames. They should be kept moist, very little air admitted, and, of course, shaded from the sun until roots have been emitted. The weeping varieties are worked on the green-leaved form. In addition to those referred to at page 287, the following represent the cream of the various groups.

In the Green-Leaved section the following may be named: *I. dipyrena*, *I. crenata*, *I. latifolia* (with Magnolia-

like foliage), *I. cornuta*, and a host of forms belonging to *I. Aquifolium* are *nigrescens*, *ferox* (Hedgehog Holly), *recurva* (*tortuosa*), *latispina*, *Hodginsi*, *atrovirens*, *platyphylla*, *Hendersoni*, and *donningtonensis*.

Of Golden-Leaved kinds: *aurea regina* (Golden Queen), Golden King, Madame Briot, *Cookii*, *Wateriana* (*aurea pumila* and Waterer's Dwarf Golden), and *lavescens* (Moonlight) may be named.

In the Silver-Leaved section good forms are: *Argentea medio-picta* (*albo-picta*) (popularly called Silver Milk-maid), *ferox argentea* (Silver Hedgehog Holly), *argentea elegantissima*, *argentea marginata* (*albo marginata*), *handssworthensis argentea*, and *argentea regina* (Silver Queen) are of merit.

KALMIA. Dwarf-growing shrubs, generally supposed to require peaty soil; but it has been proved that these shrubs are a success when grown in loam, especially if a quantity of leaf-mould has been incorporated with it; soil containing lime and chalk is injurious to them. Kalmias are well adapted for forcing into blossom in winter and early spring. For this purpose plants may be potted up in the autumn and taken into heat in batches according to the requirements of the place. After flowering, they should be placed in a gentle heat to encourage new growths, and the syringe used freely. Later on they should be hardened off and planted out on a warm sunny border to ripen the wood properly.

K. glauca (Swamp Laurel), 18in. to 2ft., is a useful front-line plant in the shrubbery, and bears bright pink flowers. *K. latifolia* (American Mountain Laurel) (Fig. 186) is one of the finest dwarf flowering shrubs; it has broad shining green leaves and pale rose flowers.

LAURUS NOBILIS (Sweet Bay) may be grown either as a pyramid or a standard; it delights in rich soil, and requires good drainage, as it soon wears a sickly appearance if water lodges about the roots. A position screened from east winds is advisable. It is a fine tree for growing in pots and tubs for placing in vestibules, halls, and cool conservatories in winter.

LEDUMS. Attractive shrubs of neat growth, and as they flower early are valuable for both forcing and room-decoration during winter. Although they succeed in loamy soil, they give the best results when planted in one mixed with peat and leaf-mould. Water should be given liberally while growth is being made. Several kinds

LEIOPHYLLUM BUXIFOLIUM (*L. serpyllifolium*, *L. thymifolium*, *Ammyrsine buxifolia*, *Ledum buxifolium*). This delightful little Sand Myrtle grows about 10 in. high, is of compact habit, with Box-like leaves, small white flowers, and the unopened buds rose-pink. A sandy peat soil suits it best. It is serviceable for edgings to beds of

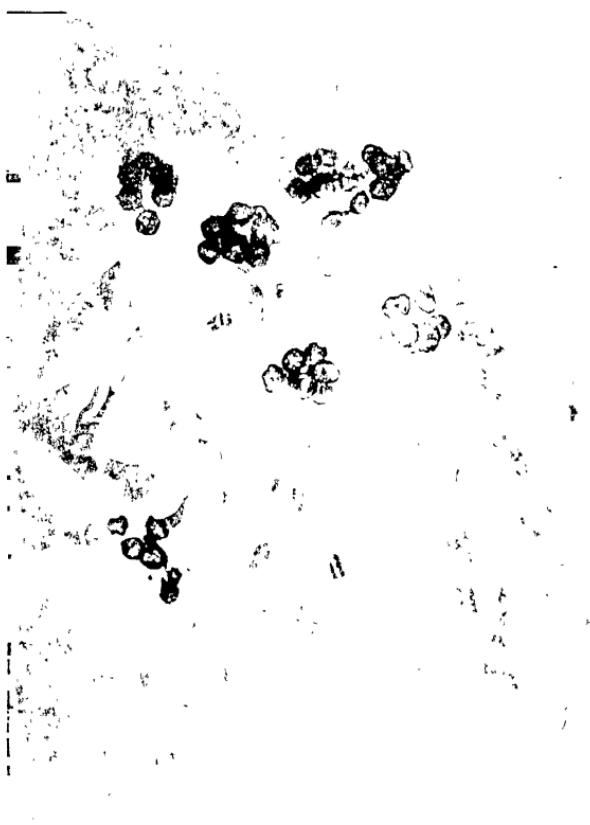


FIG. 186.—*KALMIA LATIFOLIA*.

are available, but it is only necessary here to mention *palustre*, *latifolium* (Labrador Tree), and *glandulosum*. *L. palustre* (Marsh Ledum) is the kind most generally met with; it is about 2 ft. high, with small, narrow, aromatic leaves, rusty beneath, and clusters of Rosemary-like white flowers.

dwarf American shrubs, as well as for the rock garden.

LEUCOTHOËS. Although these shrubs have a preference for damp, peaty soil, they flourish in good loam, provided it is free from lime. All the Leucothoës are very satisfactory

planted on the margins of lakes and streams. *L. axillaris* (*Andromeda axillaris*), *L. Davisiae*, *L. racemosa* (*L. spicata*, *Andromeda spicata*), *L. recurva* (*Andromeda recurva*), and *L. Catesbeiae* (*Andromeda Catesbeiae*) are the principal species, all of which have white flowers, save *recurva*, in which they are pink. Except *L. racemosa* (4ft. to 10ft.) these shrubs are from 2ft. to 3ft. high.

LIGUSTRUM (Privets) are represented in many gardens only by *L. ovalifolium* (oval-leaved) and its golden-leaved form. The first-named is useful for hedges on account of its quick growth, but, owing to its hungry roots, soon exhausts the soil, and for this reason should not be planted too freely, especially in the vicinity of the kitchen garden. *L. o. foliis aureis* (*L. californicum aureum*) is a showy, useful, and popular yellow-leaved Privet, adapted for town gardens, window boxes, and for winter bedding. The colouring of the foliage is constant, particularly when grown in partial shade. It thrives well in dry soils, and is improved by hard pruning. *L. japonicum* (*L. macrophyllum*), *L. Roxburghii*, *L. Kellermannii*, *L. syringaeflorum*, *L. corniculatum* (*L. lucidum coriaceum*), *L. lucidum* (*L. magnoliaefolium*, *L. sinense latifolium robustum*), *L. Quihoui* (*L. brachystachium*), and *L. sinense* (*L. chinense*, *L. Fortunei*) should not be omitted from a list of attractive free-flowering shrubs. *L. sinense* is noteworthy as having small round dark berries hanging on the bushes for the greater part of the winter. They average from 6ft. to 10ft. high, the last species, however, being taller.

OLEARIAS. *O. Hnastii* (Daisy Bush), 5ft., has small Box-like leaves and pure white, sweet-scented, Daisy-like flowers in July and August. *O. Gunniana*, though not as hardy as the first-named, will, nevertheless, thrive if provided with a sheltered spot.

OSMANTHUS. The Osmanthuses are cultivated principally for their handsome Holly-like foliage, but their clusters of small white and cream-white flowers are deliciously scented, and borne in the axils of the leaves very freely on good-sized plants in autumn. The soil should be rich and

well drained, and they should be planted in a position shielded from east winds. They are well adapted for planting as isolated specimens on the lawn, for growing in pots for placing on balconies, in vestibules, halls, &c., winter bedding, or for window boxes, the best for this purpose being *purpureus*. Numerous varieties are now in commerce, differing from the type in the size, form, and colour of the leaf.

Although the Osmanthuses grow on their own roots, they may be worked on stocks of the Common Privet in spring, and placed in warm, close cases until a union has been formed, and then removed to cooler quarters and grown on until the following spring, at which time they will be nice-sized plants for transferring to the open ground.

OZOTHAMNUS ROSMARINIFOLIUS (Snow Flower). A shrub (8ft.) with small white Daisy-like flowers. It thrives in ordinary soil, but prefers one composed of peat, loam, and leaf-mould in equal proportions. The drainage should be good. Unfortunately, it is not hardy all over the British Isles.

PERNETTYAS. See "Berry-Bearers."

PHILESIA BUXIFOLIA, 4ft., is slow in growth, and quite at home in the rock garden. In very cold localities it should not be grown outside. It has Lapageria-like flowers.

PHILLYREA. A useful group of hardy shrubs, and with the exception of *decora*, referred to under "Berry-Bearers," all have small leaves, mostly of a deep green colour. They are by no means difficult to accommodate, and there are few positions in which they will not thrive. They are well adapted for planting under the shade and drip of trees. *P. angustifolia* makes a nice lawn shrub; *P. media* (*P. variabilis media*), useful for planting in exposed situations; and *P. decora* (*P. Vilmoriniana*, *P. laurifolia*) bears small fragrant flowers, followed by black berries. Height 8ft. to 10ft.

PHLOMIS FRUTICOSA (Jerusalem Sage). This succeeds admirably in gravelly soils and on dry banks. It has deep green wrinkled leaves, rich yellow flowers, and is about 3ft.

PHYLLOSTACHYS. *See* Bamboos.

PIERIS. Decorative hardy shrubs, generally planted in peaty soil, but thriving in rich well-drained loam, to which has been added a quantity of leaf-mould. Like the rest of the *Ericaceæ*, they have a great dislike to lime. They delight in being kept moist at the roots, and during the growing season (especially in dry weather) should be occasionally watered overhead. Being surface-rooting plants an annual top-dressing of vegetable matter not only tends to keep the roots cool but increases the vigour of the plants. *P. floribunda* (*Andromeda floribunda*) forms its buds in winter, but does not expand them until the end of March. It is also useful for forcing. *P. japonica* (*Andromeda japonica*) and *P. formosa* (*Andromeda formosa*) are pretty species. The first two are usually small shrubs, and the last a tall grower.

PIPTANTHUS. *P. nepalensis* (*Baptisia nepalensis*, *Anagrys nepalensis*, *Thermopsis laburnifolia*) bears a wealth of pale yellow pea-shaped flowers in early summer in the open air in this country. It is apt to suffer from cold winds and hard frosts; therefore, it should be grown against a wall in districts north of London. Height 8ft. to 10ft.

POLYGALA CHAMÆBUXUS (*Chamæbuxus alpestris*). Showy dwarf shrubs, delighting in a moist, peaty soil, and useful for either the rock garden or as an edging to beds or borders of dwarf shrubs. Fragrant cream-coloured flowers, tipped with purple.

QUERCUS. Evergreen Oaks, especially *Q. Ilex*, are splendid trees for pleasure-grounds, as well as for standing as isolated specimens on lawns. They vary much in habit and height. They are not so free in growth as the majority of the deciduous sorts, and as they are rather sparsely furnished with fibrous roots, great care should be taken in transplanting them, always securing, if possible, a good ball of earth to the roots. *Q. Ballota* (*Q. cyclophylla*, *Q. Ilex Ballota*), *Q. coccifera* (*Q. kermesiana*), *Q. cuspidata*, *Q. suber* (Cork Oak), *Q. Turneri* (well adapted for avenue

planting), *Q. Ilex* and its varieties, and *Q. densiflora* (*Q. echinacea*) are worth growing. The last-named requires protection from biting winds.

RHAPHIOLEPIS. *See* page 288.

RHODODENDRONS are exceedingly beautiful flowering and foliage shrubs, and happy in loam as well as in peat. The flowers are varied in colour and often sweet-scented. The foliage, too, affords pleasing variety with its light and deep green, bronze, purple, and even variegated forms. With a careful selection of kinds a brilliant display of blossom may be maintained from the end of February until the latter part of June, and in some seasons till nearly the end of July. The flowers of the early-blossoming sorts are sometimes damaged by spring frosts, and east and north-east winds are injurious. As soon as the flowers are over, the seed-vessels should be picked off, unless seed is wanted.

Rhododendrons should have a surface-dressing of leaf-mould in spring, and copious supplies of water at the roots during dry weather will be of immense benefit to them. The best effects are produced when planted in masses according to the colours of the flowers, care being taken to allow sufficient room, so that the characters of each sort can be displayed to advantage.

Of the Himalayan species, the best are: *R. Thomseni*, *R. campanulatum*, *R. fulgens*, *R. niveum*, *R. ciliatum*, *R. campylocarpum*, and *R. glaucum*.

Other species are: *R. maximum*, *R. catawbiense*, *R. californicum*, *R. Smirnowi*, *R. ponticum* (better adapted for the woodland than the garden), *R. ferrugineum* (useful for edgings to beds and borders, or for the rockery), *R. f. atrococcineum*, *R. f. myrtifolium*, and *R. f. variegatum*.

Of all the dwarf-growing Rhododendrons, *R. racemosum* is pre-eminent, and particularly useful for the rock garden. The leathery leaves are small, deep green above, and glaucous beneath. The small flowers are pink, and the unopened buds are bright rose-pink. *R. Fortunei*, flowers, produced in dense trusses, are white suffused with delicate pink. The leaves are quite smooth and of a beautiful glaucous grey; has been crossed with some of the Himalayan

species, as well as with some of the finer hardy varieties, with the result that the *Fortunei* hybrids are amongst the most handsome of outdoor Rhododendrons.

Other choice hybrids and crosses are : *Manglesii* (*R. Aucklandi* × *album elegans*), *precox* (*R. ciliatum* × *dauricum*), *Wilsoni* (*R. ciliatum* × *glaucum*) (is intermediate in character between its parents), *kevense* (*R. Griffithianum* × *Hookeri*) (Fig. 187), *nobleanum* (*R. caucasicum* × *arboreum*), and Cunningham's White (*R. maximum* × *R. conessum*). For other kinds the reader is referred to catalogues of nurserymen making a speciality of these shrubs, like Waterer, Veitch, and Jackman.

Cuttings of the current season's well-ripened shoots emit roots if taken off in August and September, dibbled in light soil, and made quite firm at the base. They should be placed in a warm, moist, close case, and shaded from the sun.

Layering is an excellent method, but not always convenient. Autumn is the best time for this purpose, and if treated in exactly the same way as the Rose, and the soil kept damp, roots will be emitted freely.

Grafting is the method by which the hybrids are largely increased, and saddle-grafting is the best, although not the easiest system, but whip, or tongue, grafting is practised with much success. This operation is best con-



FIG. 187.—RHODODENDRON KEVENSE.

Rhododendrons are readily increased by seeds (in the case of species), cuttings, layers, and grafting. For the seeds, which should be sown soon after they are gathered, a peaty, well-drained soil is advisable, and shallow pans or boxes are preferable to deeper ones, and these should be placed in a warm greenhouse to assist vegetation. Such sorts as *R. ponticum*, *R. maximum*, &c., germinate readily if sown in frames in the open ground. The seed being very fine, care should be taken not to cover it too deeply, and a fine-rosed water-pot should be used for watering. When large enough, the seedlings should be pricked off into boxes, &c., and in due time transferred to nursery rows in the outdoor garden.

fected between autumn and March. The scions should be about the same thickness as the stocks, but never thicker, and when securely tied and a little mastic placed over the tying material, remove to a close case, where a temperature is maintained of from 6odeg. to 7odeg., and shaded from the sun. After a little growth has been made, a chink of air should be admitted, and, later on, the plants hardened off, and a neat stake placed against each one to prevent it from being knocked off. The following season the plants will be fit for planting outside. The stocks most in demand for grafting are *R. ponticum* and *R. catawbiense*, but any thoroughly hardy sort answers well. Some

operators take the stocks (which should be healthy two-year-old seedlings) out of nursery rows at grafting-time and, after they are worked, lay them in boxes of soil in heat; but the best results are obtained when they have been previously established in pots. Stocks for autumn working should be potted up in spring.

ROSMARINUS OFFICINALIS (*Fragrant Rosemary*) is very familiar, and when planted in very moist soil and a sunny aspect produces an abundance of small soft blue flowers. It also grows freely and flowers well on dry banks, 2ft. to 4ft.

RUSCUS (*Butcher's Brooms*). These are useful shrubs for undergrowth. They succeed in ordinary soil, and *R. aculeatus*, 1ft. to 2ft., forms quite a carpet of deep green leafage. It is referred to under "Berry-Bearers."

SKIMMIAEAS. See "Berry-Bearers."

TAMARIX. *T. gallica*, 12ft., succeeds admirably on sandy banks, and by the sea-coast. It bears rose-pink flowers in August.

ULEX (*Furze, or Gorse*). For planting in masses in pleasure-grounds and embellishing dry, gravelly banks and similar places, *Ulex europeus* and the dwarf *U. nanus* are too well known to need description.

VACCINIUM VITIS-IDÆA (*Mount Ida Whortleberry*) forms a neat carpet, dense in growth, and rarely exceeds 10in. in height. It has small, deep glossy green, Box-like leaves, and in April and May bears drooping, terminal racemes of pale pink bell-shaped flowers. It is very effective in September, when laden with bright red berries, which are often employed for culinary purposes.

VERONICA. Neat-growing shrubs. Not particular as regards soil, so long as it is well-drained, a water-logged condition being the least satisfactory; they succeed well near the sea. Those here mentioned are some of the best sorts for general planting. *V. Traversii* (is useful for winter bedding and well adapted for window-boxes), *buxifolia* (with Box-like leaves), *ligustrifolia*, *pinguifolia*, *glauco-carulea*,

amplexicaulis, *salicifolia*, *Blue Gem*, *Purple Queen*, *La Seduisante*, and *White Star*, are excellent sorts.

VIBURNUM TINUS (*Laurustinus*), a valuable shrub, 6ft. to 8ft., flowering from mid-winter until April out of doors in ordinary soil. It is also useful for growing in pots for the conservatory or as a room plant. There are several varieties, the best for forcing being *Frabelii*.

VINCA (*Periwinkle*). Low-growing shrubs, serviceable for planting on rockeries, dry banks, or rambling over old tree-stumps, and as they succeed in poor soils and under the drip of tall trees, their value is considerably enhanced. *V. major* has deep blue flowers, and *V. minor* has varieties differing as to flower and leaf. Propagated by division or by cuttings.

YUCCA. These delight in a fairly rich, moist, and well-drained soil, and those named produce charming effects planted either singly or in groups on the lawn. They are also well adapted for planting on or near the rockery, on sloping mounds, and look well in the centre of beds, with dwarf shrubs or suitable bedding plants grouped round them. Yuccas have few equals for winter bedding, and for filling vases for decorative purposes during winter. *Y. recurvifolia*, *Y. gloriosa* (Adam's Needle), *Y. filamentosa* (Silk Grass), *Y. f. flaccida*, and *Y. angustifolia* are sufficient for most gardens. All points considered, however, *Y. recurvifolia* is the most elegant of all the hardy Yuccas. They may be increased by root-cuttings. Cut the thick fleshy roots into pieces, plant in sandy soil, and place in gentle heat. The soil must be kept moist, but not too wet, or the roots will rot. When the young plants have made a few leaves, they should be potted into small pots, later on removed to cooler quarters, and when large enough planted outside. The caulescent kinds may be propagated by division of the stems, each piece having an eye, and treated as recommended above. Seed rarely comes to perfection in this country, but if imported seed is sown in light soil in boxes or pans, and stood in a genial heat, it will germinate freely.

Berry-Bearers.

EVERGREEN. Some of the Berry-bearers are attractive by reason of their handsome evergreen foliage, which gives them additional beauty. The following in this section are desirable :

ARbutus UNedo (Strawberry Tree) must be assigned a sheltered position, when its white bell-shaped flowers and red strawberry-like fruits will be borne simultaneously.

AUCUBA JAPONICA. This is dioecious, and therefore it is necessary to have a few male plants in the vicinity of the females. The leaves are Laurel-like.

AZARA MICROPHYLLA. A handsome shrub, 10ft., with arching shoots, well clad with small deep green glossy leaves, small fragrant flowers, followed by orange-coloured berries. Delights in a fairly rich soil.

BERBERIS. Of this genus two species are noteworthy, one, *B. Aquifolium* (*Mahonia Aquifolia*), with blue-black berries, and in winter purplish-bronze foliage; it forms a good undergrowth. The other is *B. Wallichiana*, a distinct species, with purple berries.

COTONEASTER. *C. microphylla* is the best-known species; it has pale pink flowers, and bright red berries in winter. Its variety *glacialis* (*C. congesta*) is dwarfer than the type, and quite as showy. *C. buxifolia*, as its name suggests, has Box-like foliage; its white flowers are borne in spring, and these are followed by richly-coloured berries. *C. rotundifolia*, 5ft., has persistent bright berries, which in some seasons are retained until early spring. *C. thymifolia* is a dwarf species, suited to the rockery, pinkish-white as to flower, and bright as to fruit.

CRATAEGUS PYRACANTHA is one of the finest berry-bearers, the clusters of scarlet fruits being borne freely in either a south or a north-east site. There is also a variety *crenulata*, with yellow berries.

GAULTHERIA PROCUMBENS. One of the best carpet or dwarf-growing evergreens, with small white bell-shaped flowers, bright red berries, and in autumn dark brown foliage. To

give the best results the plants should be divided every third or fourth year.

HEDERA ARBOREA (Tree Ivies). For the rock garden, as pot shrubs for vestibules, rooms, &c., and winter bedding, these are excellent, as well as for planting in groups or singly on the fringe of the lawn, when *Galtonia candicans*, Lilies, and many other bulbous subjects may be grown between them with effect. The best varieties are *elegantissima* and *fructu-luteo*.

HYMENANTHRA CRANIFOLIA, 4ft., is a beautiful subject for a sheltered spot; the berries are pure white.

ILEX (Holly). The king of berried subjects. With the exception of wet or boggy soils these plants will thrive in almost any soil or position; while they may be grown either as pyramids or as standards. All the varieties here enumerated are good: *Green-leaved*—



FIG. 188.—**HOLLY SILVER MILKMAID.**

balcarica, *uleatum*, *laurifolia*, *camelliaefolia*, *Shepherdii*, *Hodginsi*, *platyphylla scotica*, *fructu-luteo* (yellow fruits). *Variegated*—*aurea marginata*, *au. pumila*, *argentea marginata*, *ar. pendula*, *lucida*, *pendula tricolor*, and Silver Milkmaid (Fig. 188).

PERNETTYA MUCRONATA (Prickly Heath). The varieties of this are charming subjects, delighting in a well drained, moist, peaty soil and sunny position; they may also be grown in pots for rooms and conservatories. The best varieties are: *alba*, white, shaded with blush; *carnea lilacina*, pinkish lilac; *coccinea*, scarlet; *macrocarpa*, deep crimson; *nigra major*, approaching black; and *rosea purpurea*, rose and purple.

PHILLYREA DECORA (*P. Vilmoriniana*) has white hawthorn-scented flowers and black berries; it is of dwarf, spreading habit, useful for forcing for early spring.

RHAPHIOLEPIS JAPONICA (*R. ovata*). An attractive medium-sized

DECIDUOUS. This is a delightful class, and cannot be dispensed with. The following are desirable:

BERBERIS. Of these *B. sinensis* thrives well in poor soils, and bears richly-coloured berries. *B. aristata* has brownish-red bark and red berries. *B. vulgaris asperma*, *B. v. foliis-purpureus*, *B. canadensis*, *B. macrocarpa*, *B. virescens*, and *B. lycium* should all be included.

CELASTRUS ARTICULATUS. A fine subject for a sunny wall, the red berries in winter being very decorative.

COTONEASTER. A number of species in this genus are worthy of a place; they vary as to fruit colour from bright red in the case of *C. Simonsii*, *C. frigida*, and *C. bacillaris*, to almost black in the case of *C. Numbularia*. Dwarf kinds are *C. affinis* and *C. horizontalis*; the latter being a fine rockery subject, but requiring room to develop; the foliage is attractive in autumn.

CRATAEGUS (the Thorns). These are charming when in flower, and showy in autumn, when laden with richly-coloured fruits. *C. Crus-galli* (the Cockspur Thorn), *C. C.-g. ovalifolia*, and *C. prunifolia*, are all very handsome. The brightly-coloured berries remain on the trees until mid-winter, while the foliage assumes in autumn rich shades of crimson. *C. tanacetifolia* has yellowish-green fruits; *C. Azarolus*, orange-red berries; *C.*

shrub, with ovate leaves, fragrant white strawberry-like flowers, and round black fruits. Useful also for forcing.

RUSCUS ACULEATUS (Butcher's Broom). A dwarf-growing native shrub, with small deep green shiny leaves, and in winter bright red berries.

SKIMMIA. These make beautiful pot shrubs, but are readily grown in beds, where their beautiful white, fragrant flowers and bright red berries are appreciated. The latter are retained in some seasons for as much as two years, birds being their greatest enemies. *S. Foremanii*, *S. Fortunei*, and *S. japonica* are the best-known species.

Aronia, large yellow fruits, and grows freely in sandy soil; *C. coccinea* carries red berries; *C. Carricri* bears orange-red fruits which remain on the tree longer than is the case with most Thorns.

DAPHNE MEZEREUM. A well-known old inhabitant of gardens, with red or orange berries.

ELAEAGNUS. Of this genus the most noteworthy species as berry-bearers are: *E. longipes*, with oblong fruits, white-dotted, and doing best in a sandy soil; *E. angustifolia*, with pale yellow flowers and silvered fruits; *E. argentea*, with silvery leaves, fragrant yellowish flowers, and pretty globular fruits; and *E. hortensis*, another yellow-flowered kind, and one suited to dry soils.

EUONYMUS (Spindle Trees). Many species are ornamental in the dull season of the year, when their brilliant coloured seed-vessels are hanging on the wiry twigs. The best kinds are *E. latifolius*, which has, in addition to its showy capsules, purplish-red foliage in autumn; *E. europaeus atropurpureus*, with dark purple foliage; and the yellow blotched *E. aucubaefolius*.

HIPPOPHAE RHAMNOIDES (Sea Buckthorn). A beautiful shrub,

thriving in a dry soil, but very effective when planted on the margin of a pond or a lake. The berries are orange-coloured, and retained for a long period.

LYCIUM EUROPAEUM. A rapid climber, with pleasing red fruits; it likes a free, open soil.

PYRUS. *P. Aria* (White Beam) with its showy scarlet fruits is a good shrub for exposed places. It has two good varieties in *lutescens* and *undulata*. *P. Aucuparia* (Mountain Ash) needs no recommendation, but its yellow-fruited variety is not so well known. Then there are *P. Sorbus* (Service Tree), *P. intermedia*, and one or two others. The Mountain Ash is a good town plant.

ROSA. *R. rugosa* (Japanese Roses), with its purple flowers and deep-red fruits, is most attractive, and should always be represented. Other attractively-fruited kinds are *R. macrophylla*, *R. tomentosa subglobosa*, *R. cinnamomea*, *R. lucida*, *R. caroliniana*.

R. hamschatiana, *R. pisocarpa*, and *R. spinosissima*, already described and illustrated.

SAMBUCUS RACEMOSUS is an Elder with richly-coloured scarlet fruits; it likes a cool moist soil.

SYMPHORICARPUS RACEMOSUS (Snowberry). This species is well known, and its pure white berries are effective; but it is a rampant grower. *S. Heyeri* is dwarfer, and has smaller fruits of the same colour.

VIBURNUM. *V. Opulus* (Guelder Rose) is attractive alike for its autumnal tints and its bright red berries. Then there are *V. cassinooides* with rose-coloured; and *V. lantanoides* with black; and *V. dentatum*, 8 ft., with bright blue berries. *V. lantanoides* likes a moist soil; and *V. Opulus* makes a good hedgerow subject.

VITIS HETEROPHYLLA HUMULIFOLIA. A very distinct kind, with rich peacock-blue fruits.

Wall Shrubs and Climbers.

DECIDUOUS. The following is a good selection in this section:

ACTINIDIA KOLOMIKTA. A vigorous climber, conspicuous for the rich colouring of its leaves in September. It is well adapted for covering arbours, trellises, &c., and succeeds best in a light rich soil.

ARISTOLOCHIA SIPHO. A curious, vigorous climber, requiring plenty of head-room; its large overlapping heart-shaped leaves are extremely ornamental, while its yellowish pipe-like flowers, streaked with purple, are distinct. For hiding unsightly objects, covering old ruins, arches, &c., it is well adapted.

BIGNONIA CAPREOLATA succeeds admirably on a warm wall, and if planted in rich soil with good drainage, its reddish-yellow tubular-shaped flowers are borne liberally.

CHIMONANTHUS FRAGRANS. When planted in rich moist soil, and pruned at the proper time, this shrub flowers with delightful freedom, and occasionally ripens seeds.

CLEMATIS. These are better adapted for rambling over old tree-

stumps, verandahs, pergolas, trellises, and arches than for walls. Notwithstanding that they lose value when trained against walls, they are nevertheless effective.

C. montana is one of the most beautiful of white spring-flowering climbers, but wants a large space to develop. The varieties belonging to the *Patens* group are hardy in most situations, but should not be planted on an eastern wall. The following is a selection of the best varieties: Lady Alice Neville, Miss Bateman, Lord Derby, Miss Crawshay, Edith Jackman, The Queen, Albert Victor, Lord Londesborough, Fair Rosamond, Mrs. Quilter, Sir Garnet Wolseley, and Lord H. Lennox.

Although the members of the *Florida* section are hardy, they produce finer flowers when treated as pot-plants. The flowers are double or semi-double, and produced in the summer. Belle of Woking, Enchantress, J. G. Veitch, Venus Victrix, Duchess of Edinburgh, Lucie Lemoine,

Elaine, Countess of Lovelace (Fig. 189), and Mrs. G. M. Innes, are all effective.

The varieties of the *Jackmanni* group are very hardy and free-flowering. They commence to blossom in July, and continue until October. Star of India, Guiding Star, Alba, Jackmanni, Mrs. Barron Veillard, Tunbridgensis, Rubra Violacea, and Victoria, are free in blossom.

The flowers of the *Viticella* group are borne during summer. Mrs. James

CORYLOPSIS SPICATA produces its spikes of greenish-yellow fragrant flowers in advance of its Hazel-like leaves, and it should be planted freely.

EXOCHORDA (SPIREA). *E. grandiflora* and its more beautiful congener *E. Alberti*, are free-flowering ornamental white-flowered shrubs of easy culture.

FREMONTIA CALIFORNICA has large cordate leaves, and produces its rich yellow flowers freely on short peduncles along the branches. If possible, it should be planted in sandy loam.

INDIGOFERA GERARDIANA. An ornamental shrub, with neat soft green leaves and pea-like pink flowers. It flowers freely in dry soil. *I. G. Alba* is a lovely white variety.

JASMINUM. The Winter Jasmine (*J. nudiflorum*) is a bright mid-winter flowering shrub, and if associated with a background of small-leaved evergreens its rich canary-yellow flowers are seen to greater advantage. *J. n. aureum* has yellow leaves and flowers. The summer-flowering *J. officinale* has pure white fragrant flowers, which are borne freely; while *J. o. affine* may be considered an improvement on the type. The Italian Yellow Jasmine (*J. humile*) is a pretty summer-flowering kind, with deep golden-yellow flowers.

KERRIA. *K. japonica flore-pleno*, with its yellow rosette-like flowers, a favourite wall-shrub. No soil, however poor, comes amiss to this shrub.

LONICERA (Honeysuckles). *L. fragrantissima* and *L. Standishii* produce small white and cream-white fragrant flowers in January and February.

LYCIUM (Box Thorn). *L. barbarum* and *L. b. variegatum* are slender ornamental climbers of free growth, succeeding well in sandy soil.

MENISPERMUM CANADENSE (The Moonseed) has large handsome leaves and small yellowish flowers, succeeded by black berries. It grows well in poor soils and bleak situations. *M. dauricum* is of quick growth and very ornamental.

PERIPLOCA GRÆCA. A rapid climber, with lanceolate deep glossy



FIG. 189.—CLEMATIS COUNTESS OF LOVELACE.

Bateman, Thomas Moore, Henderson, Earl of Beaconsfield, and Lady Bovill are very fine.

The flowers of the *Lanuginosa* group are very large and delicately coloured. Fairy Queen, Grand Duchess, William Kennett, Blue Gem, Beauty of Worcester, Duchess of Teck, The Shah, and Lady Caroline Neville, are also of great beauty; Nivea and Pallida, however, are two of the finest of the group.

green leaves, and great clusters of purplish-brown flowers. It thrives in all soils, and is suitable for covering arbours, trellises, &c.

PLAGIANTHUS LYALLI. A rare and beautiful shrub, bearing in early summer clusters of pure white flowers with rich yellow anthers. Ordinary soil suits it.

PRUNUS TRILoba. One of the most charming of early spring shrubs. In the bud state its semi-double flowers are rose-pink, but when fully expanded they become suffused with pale pink. The flowers are borne so freely as to completely hide the long shoots.

PUNICA GRANATUM (Pomegranate) grows freely even in poor soils, and its bright scarlet flowers are borne with great freedom. *P. g. rubra fl. pl.* has double red flowers.

PYRUS (*Cydonia*). *P. japonica* and its numerous varieties are beautiful spring-flowering shrubs of easy culture. The flowers comprise shades of pink, rose, red, crimson, &c. The type.



FIG. 190.—PYRUS MAULEI.

which is red, is one of the most delightful, flowering with much freedom. *P. j. nivalis*, white, flowers a week or so later. *P. Maulei* (Fig. 190),

orange, is less vigorous in growth than the other kinds. *P. japonica atropurpurea*, *P. j. Moorloensis*, and *P. j. flore-pleno* are also conspicuous for their showy flowers.

TECOMA RADICANS. This grows freely and attaches itself to walls, &c., by means of its aerial roots. It has trumpet-shaped bright red flowers. *T. (Bignonia) grandiflora* is a quick-growing subject, with deep orange-red drooping flowers. It delights in a rich soil.

VITIS (including *Ampelopsis*). The rich and varied shades of colour assumed by the decaying foliage of certain members of this genus in autumn are unsurpassed. Besides clothing walls, they are grand subjects for rambling over porches, arbours, and such-like places. No particular soil is necessary. The Virginian Creepers (*Ampelopsis*) are perhaps the most easily grown of all hardy climbing plants, and in autumn most effective, the foliage turning to brilliant colours. *Vitis inconstans* (*A. Veitchii*) is well known; when established, it attaches itself to the driest walls. *V. capreolata* (*hederacea*) is of rapid growth, and when trained up the trunks of old trees, and allowed to ramble amongst sparsely-leaved branches, is very ornamental. In autumn its deeply-lobed leaves assume many shades of brown, chocolate, and crimson. *V. Coignetiae* has handsome leaves, which turn a rich crimson and claret. *V. Tinturier* is also brilliant in autumn. *V. cordifolia*, which succeeds better in a moist than in a dry soil, is a vigorous, beautiful sort; and so is *V. californica*. *V. Thunbergii* is a very strong grower, with larger leaves than *V. Coignetiae*, and very beautiful.

WISTARIA. *W. chinensis* (*W. sinensis*) grows freely and flowers abundantly, given plenty of head-room, a fairly rich soil, and a sunny position. Its purplish-lilac flowers are borne in drooping racemes during May and June. *W. multiflora* is a shy flowerer in a young state. It should always be planted in positions favourable to the development of its long racemes of pale purple flowers. *W. frutescens*, with pale blue fragrant flowers, is pretty.

XANTHOCERAS SORBIFOLIA displays its terminal racemes of cream-white flowers streaked with blood red in the centre better against a wall than when

planted in the open shrubbery border, unless the latter happen to be a favoured one. Its *Sorbus*-like leaves are very beautiful.

EVERGREEN. The following are all desirable :

AKEBIA QUINATA. A quick-twining shrub, with deep green leaves, and pale purple fragrant flowers, borne in March. It should not be planted on a cold, eastern aspect.

BENTHAMIA FRAGIFERA. Its great beauty lies not so much in its flowers as in its large, globular, reddish-yellow fruits. A cold, wet soil is unsuitable for the well-being of this fine shrub.

BERBERIDOPSIS CORALLINA (*Coral Berry*). On a sunny wall, the spiny-toothed, bright green leaves, and drooping crimson flowers are attractive. It delights in fibrous loam, to which has been added rough peat and leaf-mould.

BRIDGESIA (*Ercilla*) **SPICATA.** This attaches itself to dry walls as freely as the Ivy.

CAMELLIA. Apart from the beauty of the flowers, the rich green leavage is also handsome. Planted in fairly rich well-drained soil, with a sheltered aspect, Camellias flourish famously.

CARPENTERIA CALIFORNICA. A fragrant white-flowered shrub, with golden-yellow stamens. Rough loam and peat suit it admirably, but care should be taken not to expose it to cold draughts.

CEANOTHUS. *C. azureus* is of neat growth and very free-flowering. *Gloire de Versailles* (pale blue), *Lucie Lemoine*, *Papillosum*, *Divaricatus*, and *Veitchianus* are other showy, free-flowering shrubs for walls with a south or a south-west aspect.

COTONEASTER MICROPHYLLA. A charming shrub, with deep green leaves, tiny white flowers in spring, and red berries in autumn.

CRATAEGUS PYRACANTHA is particularly attractive in winter. It succeeds well in hungry soils and cold situations, where many shrubs fail to make headway.

DESFONTAINEA SPINOSA. The stiff Holly-like leaves, with red and yellow

trumpet-shaped flowers, are effective. A rich soil, good drainage, and an abundance of water in early spring, are the chief essentials to its successful culture.

ELEAGNUS PUNGENS. The gold- and the silver-leaved forms are easily grown, and are effective.

ESCALLONIA. Ornamental shrubs with showy flowers, the best known being *E. macrantha* (pink); *E. rubra*, *E. Ingramii*, and *E. sanguinea* are deserving of attention too. *E. Langleyensis*, rose-pink, is a charming plant; it is a cross between *E. Philippiana* and *E. sanguinea*.

EUONYMUS. *Euonymus japonica macrophyllus* has handsome deep green leaves, and is beautiful at all seasons. *E.j. Duc D'Anjou* and *E.j. latifolia alba variegata* are desirable kinds. *E. radicans variegata* is of quick growth, and attaches itself to walls freely. Silver Gem is valuable for winter bedding.

GARRYA ELLIPTICA. A beautiful winter-flowering shrub, whose graceful catkins are often 10in. in length, and are produced at the ends of the previous summer's well-ripened wood.

HEDERA (*Ivies*). *Hedera amurensis (macrodonta)* is a choice kind of more than ordinary merit. It is of rapid growth, attaches itself to dry walls, and has the advantage of filling in well by side growth at the bottom. Its large, overlapping, heart-shaped leaves are richly bronzed in winter. A variety with even larger leaves is *Helix dentata*, a form of *colchica*. *viridis*, *H. pedata*, and *H. lucida* are all attractive. Of ivies with medium-sized leaves, *nigra (atropurpurea)* is the most distinct, and it should be included in every garden on account of its brilliant colouring in winter, which is purple-brown, shaded with black. Emerald Green, *triloba*, *gracilis*, and *canariensis* are pleasing. Amongst Silver-Leaved kinds, *Crippsii*, *maderensis*, *variegata* (not quite hardy

in all parts of the country), *marginata elegansissima* (rapid grower), and *marginata rubra* (free grower) are fine. Of Golden-Leaved kinds, *spectabilis aurea* and *chrysomela* are the best, *succinata*, *angularis aurea*, and *arborea aurea* are also desirable.

HOLCELLIA (Stauntonia) LATIFOLIA. A vigorous climber, with bright green leathery leaves and fragrant purple flowers; it delights in full sun-shine.

LONICERA SEMPERVIRENS (Trumpet Honeysuckles) are of vigorous growth, and bear clusters of richly-coloured flowers. *L. s. minor*, *L. s. superbum*, and the well-known type are the best. The Japanese Golden Honeysuckle (*L. brachypoda aureo-reticulata*) has small green leaves netted with golden-yellow. Its long sprays are useful for mixing with cut flowers for table decoration.

MAGNOLIA. *M. grandiflora* makes a handsome wall shrub. Its large glossy green leaves are always pleasing, while its pure white, fragrant flowers are much admired. Free, open loam suits it famously; perfect drainage should be secured, and an eastern exposure avoided.

MYRTUS COMMUNIS (Myrtle), a neat shrub, with small deep green leaves and pure white flowers.

OLEARIA MACRODONTA has Holly-like leaves, and dense heads of white

blossoms in summer. *O. stellulata* (*Eurybia Gunniana*), a very ornamental species, with white flowers, needs rich well-drained soil, with a sunny aspect, protected from cold winds.

PASSIFLORA CÆRULEA (Blue Passion Flower) is well adapted for planting against a south wall; while Constance Elliot is of free growth, and produces a wealth of pure white sweet-scented flowers.

PHOTINIA SERRULATA. The feature of this plant is its Laurel-like, deep glossy green leaves, which in spring are suffused with brownish-red. It is effective either in the open shrubbery or trained against a wall.

PITTOSPORUM CRASSIFOLIUM is neat in growth, with alternate narrow light green leaves, and bears dark purple flowers abundantly. *P. Tobira* is a handsome shrub, with deep green leaves, and fragrant white flowers in summer. A useful seaside shrub.

RHAPHIOLEPSIS JAPONICA (*R. ovata*) bears strawberry-like flowers in spring, and black berries in winter; a useful shrub for low walls.

SMILAX. These are better adapted for rambling over ruins, tree-stumps, &c. Any common soil suits them. *S. asperma* (Prickly Ivy) is fairly well known, but the variegated form is less common. *S. China* has roundish leaves of a pleasing shade of green.

Weeping Trees and Shrubs.

Little seems to be known of this fascinating class, but planted judiciously in park and garden they add a distinct feature to the landscape. The evergreen sorts present characteristic beauty throughout the year, while the deciduous kinds are distinct.

DECIDUOUS. The following may be recommended:

ACER WIERI LACINIATUM is welcome upon the outskirts of the lawn, its long, slender, drooping shoots being clothed with delicately cut foliage.

ALNUS INCANA PENDULA NOVA. An elegant tree, well adapted for moist situations.

BETULA. Few trees are more effective than *Betula alba pendula*

Youngi, with its slender, drooping branches, and silvered bark. *B. a. tristis* should be planted where space is restricted. *B. a. laciniata pendula* is a graceful cut-leaved Birch, with a tall, slender, pure white stem.

CARAGANA (Siberian Pea Trees). *C. arborescens pendula* and *C. pyramidalis* are distinct and useful for small

gardens. Their pea-shaped flowers are very attractive.

CORNUS FLORIDA PENDULA. This is of good growth, and its leaves die off a brilliant red in autumn.

FAGUS SYLVATICA PURPUREA PENDULA, with its richly-tinted foliage, thrives in dry as well as in moist soils. The green-leaved weeping form (*F. s. pendula*) is distinct, but inferior to the purple-leaved variety.

FRAXINUS EXCELSIOR PENDULA (Weeping Ash) may be successfully grown in any soil or position that suits the Common Ash; *F. e. aurea pendula* is a yellow-leaved, yellow-barked form, for planting in situations where its foliage in spring and summer, and bark in winter, may be seen to the best advantage.

LABURNUM VULGARE PENDULA. A variety with drooping racemes of golden-yellow pea-shaped blossoms.

LARIX EUROPAEA PENDULA. One of the most picturesque of weeping trees, especially in early spring. It succeeds best when planted in a fairly moist rich soil.

POPULUS. *P. tremula pendula* (Weeping Aspen) does well in dry soils. Parasol de St. Julian (*P. tremuloides*) is pleasing in either summer or winter.

EVERGREEN. The number of evergreen trees of pendulous habit are not numerous, but the list comprises a few handsome kinds.

CEDRUS DEODARA. Although of weeping habit, the variety named *robusta* is much more so, and worthy of a place amongst choice weeping trees.

CUPRESSUS (Lawsoniana pendula vera) is of loose growth, and quite distinct; it is not fastidious as to soil. *C. L. filifera*, with thread-like graceful branchlets, succeeds best in well-drained soil. *C. L. intertexta* is of beautiful outline, and is well adapted for growing as isolated specimens on the lawn. *C. nootkaensis pendula* has long drooping branchlets of a rich green shade.

ILEX AQUIFOLIUM is one of the most beautiful and useful of weeping

PRUNUS. *P. (Cerasus) Mahaleb pendula*, *P. (C.) Avium pendula*, *P. (C.) semperflorens*, *P. (C.) pendula rosea*, and *P. serotina pendula* are select kinds. *P. semperflorens* is generally grafted on stocks of the Common Cherry.

PYRUS. *P. prunifolia pendula* is easily recognised by its umbrella-like form. We know of few trees so thoroughly pendulous as this, and it therefore deserves special notice.

SALIX. *S. purpurea pendula* (American Weeping Willow) forms a dense head, and thrives well in hungry soils and bleak situations. *S. caprea pendula* (Kilmarnock Weeping Willow) is distinct, vigorous, and beautiful, particularly so when in flower in early spring. The dark green leaves are large and clothed with white tomentum on the under-surface. *S. babylonica* (Babylonian Willow) is one of the finest of weeping trees, and well adapted for planting by lake or stream.

SOPHORA JAPONICA PENDULA is perhaps more conspicuous in winter than in summer.

ULMUS SUBEROSA PENDULA is very distinct and ornamental. *U. campestris microphylla pendula*, *U. c. pendula nova*, and *U. montana pendula*, are all good.

trees; its deep glossy green leaves are always pleasing, and the bright red berries add colour to it in winter. *I. A. argentea pendula*, *I. A. pendula picta*, and *I. A. pendula aurea* are all very ornamental.

JUNIPERUS (*J. communis oblonga pendula*) is by no means without attraction, as its sharp-pointed leaves hang on long, slender branchlets. *J. virginiana pendula* is a free grower, of excellent habit.

PICEA MORINDA (*Abies Smithiana*). A Fir of simple culture, and thrives well in cold, wet soils.

TAXUS BACCATA DOVASTONI and *T. b. D. aurea pendula*, with pale green leaves, striped and margined with

golden-yellow, are very handsome. *T. b. pendula* is a splendid shrub for small gardens. Worked on stocks a few feet from the ground its pendulous branches fall evenly on all sides, and soon assume an umbrella-like form; its foliage is of the darkest green.

Conifers.

ABIES (Silver Firs). The Silver Firs comprise some of the most beautiful Conifers for park decoration. Although perfectly hardy, shelter from piercing winds should be given, and a good loam enriched with vegetable matter is the soil that suits them best. Good drainage is essential.

A. amabilis (*Picea amabilis*) has spreading branches and deep bluish-green leaves arranged closely together and powdered with white on the under-sides. *A. balsamea* (*Picea balsamea*) is well supplied with light green leaves, and its dark purple cones are borne freely. As it is apt to start growth early in spring, it should only be planted in positions not likely to encourage early growth. *A. brachyphylla* has an erect stem, horizontal branches down to the ground, and clothed with rich green leaves having white lines on the under-sides; it prefers a moist soil, and is seen to better advantage when screened from east winds. *A. bracteata* (*A. venusta*, *Picea bracteata*) is of pyramidal habit, the branches with thick dark green leaves closely set together; cones, 1in. long and 2in. in diameter, with long, narrow, leaf-like bracts. An exposed situation should be selected for this Fir, as it has a tendency to grow early in spring, and generally suffers from late frosts.

A. cephalonica (*A. panachaica*, *Picea cephalonica*), or Grecian Fir, is liable to disfigurement by sharp spring frosts, unless planted in exposed positions; it bears quantities of rich velvety-brown cones. *A. concolor* (*Picea concolor*) (of free growth on exposed, well-drained soils) and *A. c. violacea* (*Picea concolor violacea*) are charming species.

Other noteworthy species are: *A. firma* (*A. bifolia*, *A. holophylla*), a beautiful tree, well adapted for the park; *A. grandis* (*Picea grandis*), with stout spreading branches and rich green

THUJA (*Biota*) **ORIENTALIS PENDULA** (Whipcord Thuya). The long growths are graceful and effective, and form quite a contrast to the somewhat formal habit of *T. (B.) orientalis*. *T. occidentalis pendula* has very elegant drooping branches.

leaves, silvery on the under-sides, and elegant cylindrical cones, prefers a damp, rich loam; *A. Iowiana* resembles somewhat *A. concolor*; *A. magnifica* (*A. campylocarpa*, *Picea magnifica*), of fairly fast growth; *A. Marietii*, a beautiful Fir for the lawn; *A. nobilis* (*Picea nobilis*), a noble Fir, with stout erect trunk, rich green leaves, having glaucous lines on the under-sides, and attractive cones; *A. Nordmanniana* (*Picea Nordmanniana*), ornamental, and the best known of all the very vigorous-growing Silver Firs, succeeding on all soils, and, unlike most of its congeners, does not start into growth sufficiently early to be damaged by spring frosts; *A. Pinsapo*, 70ft. high, of pyramidal habit, with short, sharply-pointed, bright green leaves arranged all round the branches, and cones, about 6in. long and 2½in. broad, should be allowed plenty of room.

A. Veitchii (*A. Eichleri*, *A. nephropelis*, *Picea Veitchii*) has a slender trunk covered with greyish bark, and is well adapted for either the lawn or the pleasure-ground. *A. Webbiana* (*A. chilensis*, *Picea Webbiana*), a vigorous-growing species of pyramidal habit, with deep green leaves having silvery lines beneath, with very attractive cones, should be planted on a cold soil and in exposed situations; *A. W. obovata* differs in the snowy-whiteness on the under-surface of the deep green leaves.

ARAUCARIA. *A. imbricata* [Monkey Puzzle] is the only species here calling for mention, as none of the others are hardy. A rich and moist (but not very wet) loamy soil, thoroughly well drained, suits it best, as then its growth is fairly rapid, and the leaves are of a deeper green than when planted in dry soils. When planting as a specimen, at least 30ft. to 35ft. apart should be allowed. It should not be planted in smoky atmos-

spheres, and it cannot be recommended for town gardens.

BIOTA ORIENTALIS and its varieties.
See Thuya.

CEDRUS. For ornamental planting the Cedars are well adapted, and they add grace, distinctness, and beauty to the landscape. They are all hardy, but the Sacred Cedar and its elegant varieties are liable to get damaged in spring, especially if planted on low-lying and insufficiently drained land. A rather sandy soil suits them best.

C. atlantica (Atlas Cedar), a beautiful park tree, thrives on poor soils, and is happier on cold, stiff soils than its congeners. It is also valuable for planting in exposed situations, and very handsome when carrying its shapely cones. *C. a. aurea* is conspicuous for

C. Libani (Cedar of Lebanon) (Fig. 191) is of good growth and distinct habit, reaching to a height of 80 ft., with a spread of branches frequently 50 ft. The cones are about 4 in. long, and are borne with great freedom. No soil, however poor, comes amiss to this picturesque tree, but it grows more rapidly when planted where its roots are within easy reach of water, such as by the margins of lakes.

Cedar species are increased by seeds, which may be sown in cold frames in spring in well-drained soil, the seeds being slightly covered with finer soil. Plants raised from seeds sown in heat are less vigorous in growth than those raised under the cool treatment. The variegated forms may be grafted in spring on their respective types, and placed in close cases. The Larch is



FIG. 191.—CEDRUS LIBANI.

its golden-yellow foliage, and this colour is constant. *C. a. fastigiata* is an erect-growing, glaucous-leaved variety; and *C. a. glauca* is similar in habit to the type, with glaucous leaves, while its branches droop gracefully with age. *C. Deodara erecta* is of more upright habit, with short, stiff branches and beautiful glaucous leaves. *C. D. robusta* has larger leaves than the type already noted, but is rather sparsely supplied with branches, which are given off horizontally, the lower ones sweeping the ground, and with age they all assume a weeping habit; being rather late in commencing to grow, it is less liable to damage from late frosts than are its congeners. *C. D. variegata*, *C. D. verticillata*, and *C. D. viridis* are varieties whose chief characters are indicated by their names.

sometimes used as a stock, to which the Cedars readily unite, and although growth is rapid in a young state, it has been proved that plants worked on the Larch are shorter lived than those on the Cedar stocks.

CEPHALOTAXUS. These thrive in ordinary soil, especially if a little peat and leaf-mould is incorporated with it. They also prefer partial shade to full exposure to the sun, as in the last-named position their leaves, especially those of *C. drupacea* and *C. Fortunei*, wear an unhealthy appearance. Protection from east and north winds is important. *C. drupacea*, a low, straggling bush with horizontal branches and short, flat branchlets, the greenish-yellow leaves being arranged in opposite pairs. *C. Fortunei*

has spreading branches plentifully supplied with narrow leaves, rich green above and soft green below. *C. pedunculata* (*Taxus Harringtoniana*) is a shrub with horizontal branches and deep green leaves; it grows about 8ft. high, and is of bushy, pyramidal habit. *C. p. fastigiata* (*Podocarpus koraiensis*) in habit bears some resemblance to the Irish Yew. It is of slow growth, quite hardy, and well adapted for winter bedding and window boxes.

CRYPTOMERIA. Only one species is found in this genus, and that is

for winter bedding, and in a young state is useful for window boxes, the leaves are richly coloured in autumn. *C. j. c. nana* forms a bushy shrub in the rock garden, and the foliage becomes rich crimson.

CUNNINGHAMIA. *C. sinensis*, hardy only in sheltered parts of the British Isles, prefers a light, well-drained soil, and on no account should it be exposed to east winds. Propagation is best effected by seeds.

CUPRESSUS. This very ornamental group now comprises the Retinosporas of gardens. Their habit is equally varied, some being columnar, or fastigiate, others spreading and pendulous, and a few quite globose. The following comprises the best kinds for general planting: *C. Goeniana* (*C. californica*) a low tree with ascending, spreading branches and pendulous branchlets, having slightly fragrant scale-like leaves, and in spring small yellow male catkins; it needs a sheltered position. *C. Knightiana* is not sufficiently hardy for general outdoor culture here. It is of pyramidal habit, with reddish-brown bark and small bluish-green leaves. Planted in warm soil and a sheltered position, Knight's Cypress forms a really handsome tree. *C. Lawsoniana* is striking in spring when laden with its small male catkins, which are born on quite small plants; a splendid lawn tree, as well as a useful and cheap hedge-plant. It is very variable when raised from seeds, which are produced abundantly.

Of the numerous varieties of Lawson's Cypress differing in habit, vigour, and leaf-coloration, the most meritorious are: *C. L. albo-maculata*, *C. L. albo-variegata*, *C. L. Alumi*, *C. L. amabilis*, *C. L. argentea* (a lovely lawn tree), *C. L. a. variegata*, *C. L. Bowleri*, *C. L. compacta* (a rock garden subject), *C. L. Darleyensis* (for lawns and small gardens), *C. L. erecta viridis* (for winter bedding, and also for planting beside terrace walks), *C. L. glauca*, *C. L. gracilis* (good for lawns, and grows freely on dry soils), *C. L. lutea* (*flavescens*), *C. L. nana* (better adapted for the rockery), and Silver Queen (adapted for the garden or the park).

Other good species: *C. macrocarpa* (Monterey Cypress) (Fig. 192) is



FIG. 192.—*CUPRESSUS MACROCARPA*.

thoroughly hardy in the British Isles. It enjoys a rich, deep soil, thoroughly well drained and beyond the influence of cold east winds. *C. japonica* (Japan Cedar) is useful also for avenues. Of free growth, with a straight trunk covered with rough brown bark, it forms a much-branched tree of pyramidal habit. The spreading branches are inclined to droop, and are very effective when carrying the spikes of male catkins. *C. j. elegans* is a beautiful tree for the lawn as well as

a beautiful tree, some 50 ft. high, with ascending branches, very bright green foliage, and light brown cones; it flourishes by the sea-coast. *C. m. fastigiata*, *C. m. Crippsii* (variegated variety), and the golden-leaved *lutea* (one of the most promising of recently-introduced Conifers) are all distinct. For growing in pots or tubs for winter decoration as well as for winter bedding and seaside planting, the last-named variety is well adapted.

C. nootkatensis (*Thuya nootkensis*, *Thuyopsis borealis*), the Nootka Sound Cypress, is vigorous and of elegant habit, with drooping branchlets. *C. n. albo-variegata* has its terminal branchlets and leaves variegated with creamy-white. *C. n. aurea variegata* is a yellow counterpart of the last-named, and should have an open spot. *C. n. compacta* and *C. n. glauca* are charming sorts for small gardens, and valuable also for ornamental planting. *C. n. lutea*, the golden-leaved form, is an excellent subject for planting on the edge of the lawn, as its character is constant, even when placed in partial shade, but it delights in full exposure.

C. obtusa (*Retinospora obtusa*, *Thuya obtusa*), a pleasing pyramidal tree of moderate growth, spreading branches, and elegant frond-like branchlets furnished with light shining green leaves, succeeds best in a moist soil, and prefers shelter from cold, piercing winds. *C. o. aurea* is very striking in winter; while *C. o. compacta*, *C. o. erecta viridis*, and *C. o. filifera* are three good lawn shrubs.

C. pisifera (*Retinospora pisifera*, *Thuya pisifera*) grows freely, forming a handsome specimen, with open, spreading branches and feathery light green foliage. *C. p. albo-picta*, *C. p. nana aurea* (a good rock-garden shrub for planting in full sunlight), *C. p. plumosa* (a lawn shrub that bears hard pruning well, and is beautiful for winter bedding), *C. p. p. argentea*, *C. p. p. aurea* (a grand tree for the lawn and useful for winter bedding, a rich, moist, well-drained soil and sunny site suiting it best), and *C. p. squarrosa* (a beautiful lawn tree), are varieties worth including.

C. sempervirens bears some resemblance to the Lombardy Poplar, but is less vigorous and not of such rapid growth; prefers a rather warm soil to a

cold, wet one. *C. Thyoides* (White Cedar) grows best when planted in moist soil, but makes little progress in a dry, sandy one. *C. t. glauca* is quite distinct from the type, being of more compact habit, while the leaves are of a pretty glaucous tint. *C. t. variegata* is a very desirable golden-leaved form.

Cypresses may be propagated by seeds and by cuttings. The former germinate freely if sown in sandy soil in shallow boxes or pans, and stood in a gentle heat. The seedlings should be pricked off and later on removed to a cold frame; when large enough they should be planted out in nursery rows. Cuttings emit roots if pieces 3 in. to 4 in. long are taken off in August and dibbled in light soil in a cold frame; they should be watered occasionally and shaded from the sun.

FITZROYA. *F. patagonica* is quite distinct from any other Conifer, and a vigorous, healthy specimen, with its numerous branches and elegant drooping slender branchlets, is very attractive. Unfortunately, it only makes satisfactory growth in sheltered situations. A soil composed of rough peat, leaf-mould, and loam in equal proportions forms a suitable compost for planting it in. Ample drainage should be provided, otherwise the plant will make little headway. Cuttings taken off towards the close of the summer, dibbled in light soil, and stood in a close, intermediate frame, emit roots readily.

GINKGO BILOBA (*Salisburia adiantifolia*). This, the Maidenhair Tree, is one of the few *Conifera* suitable for planting in the vicinity of towns. It is rather slow in growth, having a usually straight trunk, covered with rough greyish bark, horizontal or pendulous branches, and thick yellowish-green, smooth, fan-shaped leaves, closely resembling in shape the pinnales of the Maidenhair Fern. Its autumn tints are charming. *G. b. fastigiata* (for small gardens), *G. b. macrophylla*, and *G. b. variegata* are varieties worth including.

A deep sandy soil suits the Maidenhair Tree, and, although perfectly hardy, shelter from cold winds is advisable. It makes little progress in wet, badly-drained soil, and in such it should never be planted. The Ginkgo may be propagated by seeds, also by layering, when the lower branches are

low enough for the purpose. In layering, an incision should be made through a joint, and a little damp soil or moss pressed into the cut. This, again, should be covered with light soil, which should never be allowed to become thoroughly dry, otherwise root formation will be slow. Cuttings also root if taken off with a heel of the old wood attached and planted in sandy soil in autumn or early spring; young, well-ripened shoots may also be taken off in summer and placed in a warm propagating-case. The variegated and pendulous forms may be increased by grafting on the type in spring before growth commences.

JUNIPERUS. The Junipers vary alike in habit and in the colour of the foliage; some are erect, medium-sized trees, others are mere bushes, and yet others are of trailing habit. No special soil is necessary, as they thrive in any ordinary kind, especially if leaf-mould and a little peat are incorporated with it at planting-time.

J. chinensis, of low pyramidal or conical habit, with short branches, and glaucous or light green prickly leaves, is a valuable tree for the shrubbery or small lawn, and succeeds in cold soils. *J. c. albo-variegata* is a variety with variegated foliage, the colour of which is apt to fade unless the tree is planted in the open. *J. c. aurea*, of compact, upright habit, has the young growths of a rich golden-yellow, which colour is intensified by full exposure to the sun, and the leaves in winter are bronzy; it is useful for small gardens and for winter bedding. *J. communis* makes an excellent covert shrub, as it is not subject to the attacks of ground game. *J. c. alpina aurea* should have a place on the rockery; in spring and summer its foliage is pale yellow, and in winter the whole becomes bronzed. *J. c. hibernica* (Upright Irish Juniper) is useful for planting by the sides of walks and for small lawns.

J. drupacea (Plum-fruited Juniper) (Fig. 193). It is a handsome Conifer for small lawns, and when planted in loamy, well-drained soil and sheltered situations, forms a tree of upright habit, with leaves of a rich green shade. *J. littoralis* (*J. conferta*) is of prostrate habit, and forms a dense carpet. Its glaucous leaves and reddish-brown bark—especially of the young wood—are

particularly pleasing in winter; it is free in growth and a delightful rock-garden shrub. *J. phoenicea* (*J. bacciformis*, *J. tetragona*) and *J. rigida* are beautiful lawn trees.

J. Sabina (Common Savin) is useful for planting on mounds and rockeries; it forms a dwarf shrub of spreading habit, and grows freely in light soils. *J. S. procumbens*, *J. S. prostrata*, and *J. S. variegata* are pretty rock-garden shrubs (the last-named should be planted in shade). *J. thuri-*



FIG. 193.—*JUNIPERUS DRUPACEA*.

fera (Spanish Juniper) has an erect, slender trunk, and short ascending branches, covered with small grey leaves and black berries, and is well adapted for small gardens. *J. virginiana aurea*, though not so free, is very ornamental; its young shoots and leaves are yellow, but it is only when planted in a rather shady spot that its true character is maintained.

LARIX (Larch). *L. europaea* is one of the most charming of trees. Besides being one of the hardiest, it is perhaps the least fastidious of all Conifers, as it flourishes in poor as well as in rich soil. Its long, straight stem, 80ft. or more in height, and rather short branches, with clusters of narrow light green leaves, form a beautiful picture in early spring against the sky. It is of extremely elegant growth, and with age its branches have a decided drooping tendency, which imparts additional beauty.

The Larch is readily increased from seed, which should, however, be gathered from healthy, vigorous specimens, as when taken from sickly ones it generally produces weakly trees, which are apt to suffer from the terrible Larch disease. The seed may be sown in well pulverised soil, and when a few inches high the seedlings should be pricked off into nursery rows. As the Larch commences to grow very early in the spring, autumn planting is preferable.

LIBOCEDRUS CHILENSIS (*Thuya chilensis*) forms a much-branched tree, soft, high, and of close, compact, pyramidal outline, its branches being clothed with glaucous green leaves. A rich, moist, well-drained soil and sunny spot suits this rare Conifer best. *L. decurrens* (Incense Cedar) is the hardiest and most vigorous of the genus, and it is suitable for planting in gardens of limited extent. Its variety *glaucua* is very beautiful.

PICEA (Spruce Firs). *P. ajanensis* is a pretty Spruce, with horizontal branches, flat branchlets, narrow leaves (which are deep green above and silvery-white beneath), and numerous small cones. *P. Alcockiana* (*Abies bicolor*) is of pyramidal habit, and is often confounded with *P. ajanensis*; it is, however, more rapid in growth, and later in commencing to grow in spring. *P. Engelmanni glauca* is a handsome lawn tree, having bluish-grey leaves.

P. excelsa (Norway Spruce) makes an excellent shelter to tender shrubs, and flourishes in all soils, but delights in a moist one. There are numerous varieties of the Norway Spruce, differing in habit, vigour, leaf colour, &c. The following is a selection of the most meritorious: *P. e. aurea* (good in a warm soil and a sunny situation), *P. e.*

Clanbrassiliiana (suited to the rock garden), *P. e. diffusa* (for the rockery), *P. e. finedonensis* (with fan-shaped branches and greenish-yellow leaves), and *P. e. pygmaea* (the dwarfest of Spruces, and useful for the rockery).

P. Omorika (Servian Spruce), of pyramidal outline, and having short, spreading, fan-shaped branches, clothed with rich green leaves and short cones, is a pretty lawn tree. *P. orientalis* (*Abies Wittmanniana*) thrives best in a moist, rich, well-drained soil; it is pyramidal, with fan-shaped branches, and in spring soft yellow young leaves, varying to deep green as the season advances; it succeeds in exposed situations, and is a good lawn tree. *P. polita* (*Abies Torano*), Tiger-tail Spruce, is a handsome Spruce for the park and lawn; it is of conical habit, the horizontal branches being clothed with stiff, rich green, sharply-pointed leaves, and the tree having reached a certain size the branchlets droop gracefully; being late in commencing to push forth new growths, it is seldom injured by frosts. *P. pungens glauca* (Blue Spruce), with glaucous leaves, is in habit identical with the type.

PINUS. *P. Ayacahuite* bears a slight resemblance to *P. strobus*; it is a handsome lawn tree, but should have shelter from cold winds. *P. Balfouriana* (Fox-Tail Pine) is of sturdy growth, compact, and bushy, and has short glaucous leaves arranged all round the shoots. *P. Bungeana* (Lace-Bark Pine) is an elegant, medium-sized tree, with long and rather slender branches and narrow, stiff, bright green leaves. *P. Cembra* (Swiss Stone Pine) is very attractive; it is of pyramidal habit, and in a young state rather slow in growth, but when properly established it grows fairly rapidly. *P. contorta* (*P. Bolanderi*, *P. Boursieri*), a medium-sized handsome tree, with a straight, stout trunk, short branches, and deep green leaves, thrives well in damp soils; it can be recommended for restricted gardens. *P. Coulteri* (*P. macrocarpa*) succeeds admirably on poor soils, and is very ornamental; it has long, strong, horizontal branches and long, narrow, glaucous leaves. A radius of about 30ft. should be allowed for this tree to reveal its true character.

P. excelsa (Bhotan Pine) requires plenty of head-room, and succeeds

best in light soil. Shelter from east wind is important. *P. insignis* (*P. radiata*), the Monterey Pine, has numerous stout branches, closely packed with glossy green leaves; it is a splendid lawn tree, but should be shielded from cold winds, be planted in a cold soil, and in a situation not favourable to early growth; excellent for seaside planting. *P. Laricio* (Corsican Pine) thrives in all soils and exposed situations, and is valuable for ornamental planting. *P. L. austriaca* is one of the hardiest and best for

with spreading branches and dark green foliage. Thrives better in dry, sandy soils than the majority of Pines.

P. Pinaster (Cluster Pine) (Fig. 194), when planted in sandy soil, forms a splendid specimen; it is a noble tree for shelter, and one of the best for the sea coast. *P. Pinæa* (Stone or Parasol Pine) is a picturesque round-headed tree, but rather tender. *P. strobus* (Weymouth Pine), grows vigorously in cool moist soil; its leaves are pale green, with silvery lines beneath. *P. sylvestris* (Scotch Fir) is a handsome, very hardy Fir, too well known to need more than passing reference. It thrives on all soils, is of rapid growth, and very cheap. *P. s. aurea* (Golden Scotch Fir) is very attractive, especially in winter; it is a slow-growing variety, and although its leaves are usually of a pale green shade in summer, they assume a rich yellow in winter, at which season it is unquestionably the brightest of golden-coloured Conifers. An open situation should be afforded it, and a dry rather than a moist soil suits it best. *P. s. fastigiata* is conspicuous for its Lombardy Poplar-like habit.

PODOCARPUS. The majority of species are not sufficiently hardy to withstand the open air in this country. They succeed best in a moist, loamy soil, but water should not become stagnant at the roots. A position screened from east winds should, if possible, be selected.

P. alpina should be planted in front of taller-growing shrubs or, better still, in the rock garden, where its trailing growths, often 3 ft. in length, and clothed with small, linear, deep green leaves, having a glaucous hue beneath, present quite a cheerful appearance, even in winter. When the main growth is supported by a stake it rises to a height of several feet. *P. chilina*, a loose, much-branched, free-growing, small tree, is useful for planting on the outskirts of the lawn.

PRUMNOPIITYS ELEGANS. This distinct-looking Conifer forms a large bush or small tree of dense pyramidal habit. A well-drained, loamy soil, to which has been added a quantity of good leaf-mould, and a sheltered position suits it admirably.

PSEUDOLARIX KÄMPFERI (*Larix Kämpferi*). The Golden Larch is of

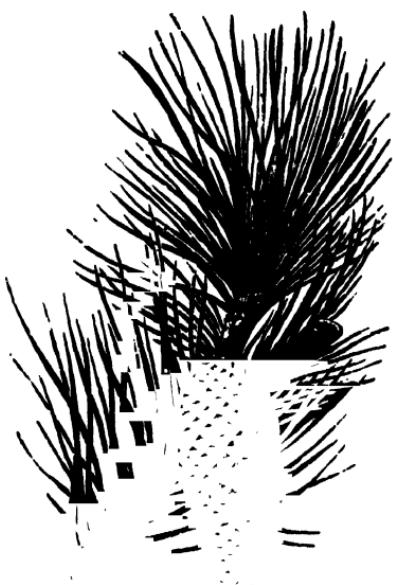


FIG. 194.—PINUS PINASTER.

serving as a breakwind to tender trees and shrubs, and grows freely in soft soils; it is a good seaside Pine. *P. L. Pallasiiana* (*P. caramanica*) is finer than the type, and a rapid grower, with a straight trunk, horizontal branches, and deep shining green leaves. *P. monticola* is suitable for both the park and the garden. It grows upwards of 70ft. high, with an erect trunk and short branches, clothed with rich green leaves. It prefers a damp soil. *P. muricata* (*P. Edgariana*) is a medium-sized massive tree,

rather slow growth and pyramidal habit. Its horizontal, spreading, fan-shaped branches are clothed in spring and early summer with soft yellow leaves, which towards autumn assume a beautiful shade of yellow, deepening to bronzy-brown before they fall; the brownish-coloured bark of the young shoots is attractive in winter. The Golden Larch cannot be depended upon to reproduce itself from seed. The usual method of propagating it is by grafting in early February on stocks of the Common Larch (*L. europaea*). Select young, well-ripened scions, about the thickness of a lead-pencil. After they have been secured to the stock, place them in a moderately warm case, and when a union has taken place, remove to more airy quarters.

PSEUDOTSUGA DOUGLASII (*Abies Douglasii*, *Picea Douglasii*, *Tsuga Douglasii*). A splendid tree for the park and landscape, but shelter from east winds is advisable. It is of rapid growth, and forms a pyramidal tree, varying in height according to soil and position. The branches are horizontal, and the small branchlets are supplied with rich green leaves. Its pendulous and attractive cones (about 3in. long) are borne freely on medium-sized trees. *P. D. brevifolia*, *P. D. glauca*, *P. D. pumila*, *P. D. Stairii* (a beautiful lawn tree), and *P. D. taxifolia* are distinct varieties.

RETINOSPORAS. See *Cupressus*.

SCIADOPITYS VERTICILLATA (Umbrella or Parasol Pine). This species delights in peaty soil, with which is incorporated a quantity of leaf-mould. An eastern exposure should be avoided, but the greatest drawback to its successful culture is a cold, wet, badly-drained soil, as anything like stagnation at the roots is fatal to it. As it does not transplant well, great care should be taken in the preparation. A good ball of earth should be attached to the roots, and the latter protected from drying winds by placing mats or similar material round the ball. After planting is completed, water should be given to settle the soil about the roots, and an occasional damping overhead will induce healthy growth. A yearly top-dressing of leaf-mould will increase the vigour of the plants. *S. verticillata* is

well adapted for planting as single specimens on the lawn, and is serviceable for all kinds of decorative work. It forms a bold, symmetrical specimen, with horizontal, spreading branches, and long, narrow, leathery leaves of the deepest green, produced in whorls of from thirty to forty at the tips of the growths, and bearing some resemblance to an open umbrella.

SEQUOIA (Wellingtonia) GIGANTEA (Mammoth Tree). A handsome tree for the park, delighting in a good deep loam, thoroughly well drained, and in a situation open yet shielded from piercing winds and spring frosts. *S. gigantea* never makes satisfactory progress when planted near the drip of trees, or on cold, wet soil, and cannot be recommended for planting in towns, as it dislikes a smoky atmosphere. It is of conical outline, with a straight trunk, rather short branches, and small, spirally-arranged, scale-like, glaucous leaves. Best propagated from seeds, as plants raised from cuttings do not make such good leaders as those raised from seeds.

S. sempervirens (Taxodium sempervirens). The Californian Redwood has its trunk covered with brownish-red bark, and its rather long, drooping branches, with flat deep green leaves, are both distinct and pleasing. It has the somewhat objectionable habit of growing rather late in the season, consequently the young growths are sometimes unable to withstand early sharp frosts. *S. s. gracilis* is a beautiful tree for the lawn.

TAXODIUM DISTICHUM (Cupressus disticha). The Deciduous Cypress has a straight trunk, and slender, feathery branches, clothed with soft green leaves, which towards autumn assume a dull red shade, and highly-coloured bark. It delights in a cool, moist soil, and is admirably adapted for planting by the margins of lakes and streams, but shelter from cold winds should be afforded.

TAXUS BACCATA (English Yew) is familiar to everyone. Its varieties are, however, far from familiar, and attention will be drawn to a few of the most meritorious. *T. b. adpressa* is of compact growth, with spreading branches and dark green leaves; very useful for small gardens.

T. b. argentea should always be planted in an open spot to bring out its true leaf colour. *T. b. aurea* is of compact, pyramidal habit, and has golden-coloured leaves, and the tips of the branchlets stained with yellow; useful also for winter-bedding, window-boxes, and the shrubbery. *T. b. elegantissima* is a showy variety, whose leaves are distinctly edged with cream-white when planted in partial shade. *T. b. ericoides* is valuable for the rock garden; its stem is covered with brownish-red bark, and the leaves are Heath-like. *T. b. fastigiata* (Irish Yew) is of upright, close habit, and useful for gardens of limited size. Other varieties are *T. b. f. aurea*, leaves and growths marked with golden-yellow; *T. b. fructu-luteo*, a yellow-fruited form; and *T. b. Washingtoni*, a variegated form, free in growth, and whose leaf-colouring is constant.

THUYA. In the *Thuya* genus are now included *Thuyopsis dolabrata* and *Biota* of gardens, and they form an important section, suitable alike for small and large gardens. *T. dolabrata* (*Thuyopsis dolabrata*) is admirably adapted for planting on lawns, delighting in a moist, well-drained soil and shady position beyond the influence of cold winds; it is of pyramidal, bushy habit, with flat, scale-like leaves, which are bright green above and glaucous beneath, well suited for small gardens, also for growing in pots or tubs for placing in corridors, &c. *T. gigantea compacta* is a very handsome Conifer of compact growth. *T. g. plicata* (*T. occidentalis plicata*) is of great decorative value, and thrives in poor soils and exposed situations. *T. g. p. lutea* is attractive by reason of the rich yellow tint of its foliage in winter.

T. japonica (*T. Standishii*, *Thuyopsis Standishii*), one of the most ornamental, has horizontal branches, pendulous branchlets, brownish-yellow leaves which become bronze-tinted in winter, and brown-coloured stem.

T. occidentalis aurea is the best of the golden-leaved Thuyas, and is valuable for giving colour to the shrubbery; it makes a beautiful lawn tree, and its golden-coloured foliage is touched with bronze in winter.

T. orientalis (*Biota orientalis*) (*Chinese Arbor Vitæ*). A useful

Conifer, thriving well in ordinary soil, provided suitable drainage is given. There are many handsome varieties: *T. or. argenteo-variegata* (conspicuous for its silver variegation) should have a sunny spot. *T. or. aurea* (*T. aurea*, *T. compacta aurea*) is a dwarf shrub whose young growths are wholly yellow, but gradually change to a greenish tinge. *T. or. elegantissima* is of erect, compact habit, with yellow foliage. *T. or. ericoides* (*Retinospora ericoides*) (a gem for the rock-garden) presents an attractive appearance at all seasons of the year, an excellent sort for winter bedding. *T. or. semper-aurescens* is the most distinct golden-leaved *Thuya*, and one of the most useful of its class for the garden, forming a neat, globular bush, well adapted for winter-bedding, and useful for window-boxes, as well as for pot culture for winter decoration.

TSUGAS (Hemlock Firs). These are all of elegant growth, hardy, and delight in moist soil and an open situation, but the position must be sheltered from east winds. They are splendid lawn trees, and should be more frequently planted. *T. Brunoniana* (*Abies Brunoniana*, *A. dumosa*) forms a dense bush or small tree, with elegant drooping branches, and small-pointed, glaucous-coloured cones. *T. canadensis* (*Abies canadensis*) has drooping branchlets clothed with light green leaves, glaucous on the under-sides, and attractive cones. *T. c. albo-spica* is a showy variety with variegated foliage, creamy-white in summer, and in winter tinged with violet; a gem for the lawn. *T. c. milfordensis* is a compact variety, dwarf, and very attractive. *T. Pattoniana* (*Abies Pattoniana*, *A. Williamsonii*), is well adapted for planting on lawns. Its branches are short and horizontal, and its small branchlets clothed with light green leaves. The variety *glauca* is also a beautiful lawn tree. *T. Sieboldi* (*Abies Sieboldii*, *Tsuga diversifolia*), the Japanese Hemlock Fir, is an excellent sort for planting on the fringe of the lawn as well as in small gardens. It is of pyramidal habit, with spreading, fan-shaped branches well clothed with short grass-green leaves, glaucous on their under-surface.

WELLINGTONIA GIGANTEA. See *Sequoia gigantea*.

CHAPTER VIII.

AQUATIC PLANTS.

**Their Place in Horticulture—Simple Methods of Culture—Enemies—
Making Ponds—Water-Supply—Rockeries—Tanks—Planting—
General Collection of Species and Varieties.**

JUDGING from the increased interest taken during recent years in the cultivation of Aquatic Plants, and the paucity of reliable information respecting them that is readily available to the majority of horticultural readers, it is hoped that the particulars referring to them in the following pages will in some degree serve the purpose that has occasioned their appearance. Every contribution that has for its object the desire to familiarise the many interesting and picturesque plants which are included in this chapter cannot but serve a useful purpose, for it is certain that the more a general knowledge of them increases, the more popular will they become, and the greater will be the encouragement for expert growers of them to secure and distribute new and improved forms of some of the genera. Just in proportion to the care that is bestowed on the various requirements of the plants, and the careful consideration given to the disposition of a desirable selection of them, will be the measure of success that may be fairly anticipated.

The subject with which we are dealing, so far as space will permit, will embrace observations on the treatment of outdoor ponds and tanks. Further space will be given to an enumeration of the most desirable kinds that may be advantageously associated with them. In all cases there will be considerations as to the space and means available for their cultivation; and it may be stated that considerable gratification may be obtained from very simple and restricted contrivances that may be quite sufficient for the requirements of a limited number of them.

As an example of what may be done in a small way, we may say that barrels cut in halves may be employed in which to grow many Aquatic Plants. These may be sunk in the ground to within a few inches of their tops, or so grouped as to be faced with rustic work, which would also act as a shield to their exteriors from the rays of the sun. Large earthenware pans may also be used; but it must be borne in mind that whenever such vessels are used, precautions must be taken to protect them from exposure to severe frost that would cause them to burst. Notwithstanding this drawback to their use, in many instances they would serve the purpose of at least helping the amateur to acquire a more intimate knowledge of the particular kinds chosen for what may be only regarded as an interesting experiment in their cultivation. As an example, it will suffice to mention that of a plant remarkable for its uncommon prettiness, and yet one that is seldom met with in similar surroundings. We refer to the wild Flowering Rush *Butomus umbellatus* (Fig. 195), which we once saw flourishing in a delightful fashion in an upright, glazed earthenware vessel at the foot of a fern rockery in a confined town garden. This plant, Gerarde wrote, "is, of all others, the fairest and most pleasant to behold, and serveth very well for the decking and trimming up of houses, because of the beautie and braverie thereof"; and it cannot be denied that the *Butomus* is amongst the most elegant of our hardy Aquatics. This instance is mentioned for the purpose of showing what may be accomplished with very limited resources in respect of the cultivation of other representatives of this interesting class of plants. The simplicity



FIG. 195.—*BUTOMUS UMBELLATUS.*

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of a contrivance that is satisfactory in its employment is often its chief recommendation, more especially when it admits of extended application.

From a successful employment of simple contrivances encouragement may be derived for engaging in more enterprising efforts with respect to growing some of the choicer or rarer kinds that need but a limited space in which to develop their full beauty. This plan would likewise be of occasional service for the accommodation of reserves or duplicates, or for any of the smaller plants that may be required to be kept under close observation. Enough has been said to show that at least something may be done in the way of successfully growing a few of these plants without the aid of any very elaborate appliances.

In numerous instances there may be already means at hand, in the form of tanks which have been constructed for the storage of water, that could be at once utilised for the reception of some of the many beautiful hardy *Nymphaeas* now so readily obtainable; but it should be remembered that, excepting when the tank is of large dimensions, those of a neat habit will be preferable for this purpose to vigorous-growing kinds. The planting and arranging of them are largely discretionary, the use of tubs or boxes for the former being a matter of convenience; but in their arrangement, as far as practicable the alternating of dark and light shades of colour may be generally depended on to produce a pleasing effect during their season of flowering. These observations are intended to apply to tanks that are already in existence: the construction of new ones will be dealt with further on in this Chapter.

The possession of ponds or lakes is the great desideratum for exemplifying the admirable effects that can be produced by these plants when their cultivation is as skilfully undertaken as is the case with many other things. It is to the initial step that may be attributed the measure of success that often rewards the efforts made in attaining its accomplishment; so is it in respect to what could aptly be termed an ideal water-garden. A natural taste combined with a practical knowledge is essential in carrying out the details of this kind of work, which should be done in accordance with a carefully-designed plan. It is here that the advantage of consulting an expert in this department of horticulture is of primary importance, and it is indeed within his province to direct the scheme throughout to a successful issue. Even when everything has been carefully done that seems to be necessary to ensure establishing *Nymphaeas* in large ponds or

lakes, they are not then entirely free from casual mishaps. For instance, in a season of long-continued drought the water may sink to an abnormally low depth, and in receding from the plants leave their crowns exposed above its surface to endure an uncongenial element and its consequences.' We recall one case where, after several of the choicer kinds had become fairly established, they were discovered unexpectedly removed from their allotted stations and floating promiscuously in the lake, which depredation had been the work of some mischievous swans.

Interest is now evidently being more generally taken in acquiring some of the rarer kinds of *Nymphaeas* in places having facilities for growing them, and where the commonly.



FIG. 196.—*NYMPHEA ALBA*.

known white *N. alba* (Fig. 196) has hitherto been perhaps the sole representative of the genus. It must not be imagined, however, that the new introductions, notwithstanding their varied charms, will ever be likely to entirely usurp the places of this old native favourite. Where the familiar white Water Lilies abound they present, during their season of flowering, as delightful a spectacle as it is possible to imagine in connection with rural scenery, more particularly in sheltered places. Beyond where steamboats churn the river stream, these are to be found helping materially to impart to their surroundings the appearance of reposeful seclusion that is so great a charm to frequenters of the riverside. There are not a few to whom some of these scenes are familiar, and who have felt delight in viewing closely the floating flowers expanding their broad and spotless petals to the sun.

To careless minds they seem to roam
 Abroad upon the river;
In all their movements chained to home,
 Fast rooted there for ever.

Such scenes are emphatically worthy of the pains of preserving, and in the not very distant future it may be considered desirable to undertake the protection of these Aquatic Flowers—born of the river and on the river borne.

Water, whether in the shape of a lake, pond, river, or stream, has always formed an important feature in landscape gardening, but up till the past few years the cultivation of hardy Aquatics has been a branch of horticulture very much neglected ; in fact, there are numerous instances where scarcely any regular attention has been bestowed on the embellishment of the surface or sides of lakes or ponds, by establishing the choicer kinds of Aquatics that are so suitably adapted for this purpose, and which impart to them so much additional interest and pleasure. There are, however, indications that the merits of water gardening, with its charming and beautiful effects, are better appreciated, and in many leading establishments the cultivation of Aquatics is being deservedly made a special feature. Doubtless, this has to a great extent been brought about by the introduction of the many beautiful hybrid Water Lilies raised by the skilful operations of M. Latour-Marliac, to whose successful labours we are so greatly indebted for many exquisitely-coloured novelties. In these lovely hybrids we get great variation in size, shape, and colour of the flowers, and their loveliness is considerably enhanced by the freedom with which they are produced and the delightful fragrance of many of them. Some of these hybrids are also as hardy and as vigorous in habit as our own well-known common Water Lily (*Nymphaea alba*), and the conditions under which the native plant is found to flourish best are those in which these likewise may be expected to succeed equally well. The new hybrid Water Lilies raised by M. Marliac have been referred to in terms of high appreciation as forming an important and welcome addition to collections of Aquatic Plants. They are already rather numerous, and will doubtless be supplemented by more from the same raiser as well as from others ; and this anticipation gives rise to the opinion that only such new productions as are distinct, or superior to those already in cultivation, should be selected for distribution, for a multiplicity of varieties possessing a too close resemblance to others is to be deprecated.

In gardens where a natural lake or pond exists, provided it has an ample supply of water and an efficient outlet to prevent stagnation, a water garden might be formed, which, when judiciously planted, would become permanently interesting and pretty, and in addition to providing a new feature, would impart additional beauty to the surroundings. It is not unusual to see a stagnant pond overgrown with rank vegetation that yearly adds to the decomposing mass of vegetable matter in its bed, and the effluvia arising therefrom cannot be expected to form a very pleasing feature in any garden, yet there would probably be no great difficulty in converting a pond of this description into one of enduring prettiness.

The margins and banks of streams afford excellent opportunities for establishing without much difficulty many plants that, in the

course of time, would impart a pleasing effect to what might previously have been bare, uninteresting, or otherwise covered with indigenous coarse-growing vegetation.

There is nothing in connection with horticulture that is more fascinating, or that presents more beauty, or, on the other hand, affords greater pleasure for the amount of care bestowed on it than a water garden, no matter of whatever dimensions, when natural and tasteful effects are produced in planting it, and the conditions are favourable to the requirements of Aquatics and the numerous plants which can be suitably associated with them. Water Plants are exquisite; there is so much in their surroundings that is absorbing and delightful. They are usually of the easiest possible culture, and when once well established, will practically take care of themselves, provided a limit be kept on the more vigorous-growing sorts to prevent them from over-growing those of slenderer and less sturdy growth. A garden of this description would be quite as much an acquisition in a small establishment as in a large one, although the area to be dealt with would only admit of one being planned on a much smaller scale for the reception of some of the numerous small-growing Aquatics and other plants.

WEEDS, &c.—Weeds will occasionally obtrude themselves, and these must be removed as soon as they put in an appearance, for if allowed to become established, which they quickly do, some difficulty may be eventually experienced in eradicating them, and then not before they have either crippled the growth, or perhaps entirely destroyed other plants. In tanks, and also in ponds where there is but a slight current of water, various forms of conervoid algae—green, thread-like vegetation, members of a low order of the Vegetable Kingdom—will sometimes make their appearance, more especially during warm weather; these, upon rising to the surface of the water, should at once be removed, or they will form dense masses, detrimental to the growth of other plants. If the Water Lilies are well furnished with foliage the algae would be less troublesome to deal with, and the introduction of a stock of fish would also prove very serviceable in keeping the same in check.

For the removal of dead leaves, weeds, or any accumulation of floating refuse, as well as to give the necessary attention to any plants requiring it in tanks or small areas of water, a strong, light plank or ladder might be used of sufficient length to take a secure bearing at the ends; but in large ponds, where this is impracticable, wading-boots have to be resorted to.

INSECT PESTS, RATS, &c.—Aquatics, more especially those with floating leaves, are generally fairly free from injurious attacks of insect pests, although sometimes they become affected with green or black *Aphis*. These can, however, generally be removed with

the aid of a syringe or hose-spray; but the most effectual remedy is a natural one—a good heavy shower of rain, which also imparts to the plants an additional brightness. In some cases it may be desirable to use an insecticide, and should this be resorted to a solution of tobacco-juice will be found to answer the purpose effectually, without causing the least injury to the plants. Water-rats will sometimes become troublesome, if allowed to be undisturbed in their visits, by destroying the buds and flowers of Water Lilies, but they may generally be captured by means of tempting baits without very much difficulty. Waterfowl might play havoc with small plants if unguarded, but, as previously mentioned, it is most desirable that these should be grown in reserved quarters until sufficiently strong to plant out where they are liable to this contingency.

MAKING PONDS.—In selecting a site for an artificial piece of water it should be borne in mind that water naturally seeks its bed in low-lying ground; therefore, in the construction of a pond, it is very important that this particular should be observed wherever the conditions are favourable for doing so, or an unreal effect will otherwise be produced. The outline should be carefully considered, and formal or unnatural shapes should be avoided, as these would, to a cultivated taste, present a too artificial appearance. The sides should be represented by projections and irregular curves, avoiding the introduction of straight lines, which are invariably objectionable, and seldom occur in a natural formation. Artificial work as far as possible should be carefully concealed below the intended water-level line, or provision made for concealing it with vegetation when planting operations are in progress. If the soil is of a clayey nature and retentive of water where it is designed to form a pond, this work will be very much simplified; but should it be of a porous nature, then tempered clay will have to be introduced and puddling resorted to to prevent waste of water when the work is completed. When the soil has been excavated as deeply as may be desired—say to a minimum depth of about $3\frac{1}{2}$ ft. in the middle or deepest part, gradually diminishing to about 1 $\frac{1}{2}$ ft. at the margin, the sides sloping outwardly—the surface of the excavation should be made as firm as possible, and regularly finished off, ready for the puddling process. To effect this, clay should be beaten and worked into a thoroughly tenacious nature wherever most convenient to do so, and when it is fit for use the bottom and sides of the pond should be evenly covered throughout with it to a thickness of 9in. to 12in. This will require to be well rammed and beaten as the work proceeds, so that it may be thoroughly united, and so prevent the water from percolating through it. This work should be done expeditiously, and as soon as it is completed the water should be gradually admitted. Of course, cement concrete

might be used for lining the interiors of small ponds, but in the case of larger ones this would be a rather expensive process in comparison to puddling with clay. After the puddling operation is completed, the deepest part in the pond would be from 2½ ft. to 3 ft., and this would form the most suitable position for depositing the necessary mounds of soil for the reception of Nuphars and the more vigorous-growing Nymphaeas that may be selected, the margin being suited to the requirements of those plants that only require shallow water in which to grow.

WATER-SUPPLY.—In supplying an artificial pond with water, it is very important that the source from which it is obtained should be considered, as Aquatics, and more especially the choicer kinds of hardy Nymphaeas, do not flourish satisfactorily in continually running water of a low temperature, as by a continuous current entering the pond, and this observation applies particularly to the *odorata* group. Therefore, for the benefit of the plants, every provision possible should be made to ensure as high and as constant a temperature as possible, more especially during the time that the plants are in active growth. A pond situated in a sheltered, sunny position provides the best aspect, especially so for those of tender habit, and it would conduce to a greater prolongation of their flowering period. Where a sufficient, constant, and steady supply can be laid on from an extraneous lake, river, or stream, it will be of great advantage to do so, this being more beneficial to the health of the plants than that supplied direct from a natural spring or drawn from a low-level in the earth. The water obtained from the last-named sources is of too chilly a nature to favour a luxuriant growth, whereas the former would obviously best meet the plants' requirements, it being aerated and, consequently, of a higher temperature. The inrush of any considerable quantity of water should also be avoided, as the disturbance caused thereby is calculated to be detrimental to their well doing. All that is really required is a sufficient supply of water to prevent stagnation, and, when this is well regulated, successful culture will be in a great measure assured. Means should also be taken to prevent the level of the water from fluctuating to any appreciable extent by constructing an outlet at the intended water-level line, which will suffice for carrying off a similar quantity of water to that which enters the pond.

ROCKERY.—Where an opportunity is afforded of forming a small pond in connection with a well-made rockery, provided one does not already exist, it will, if properly constructed and judiciously planted, form an additional charm to that always interesting and attractive feature in a garden. In its formation an irregular outline should be observed, as this would be conducive to its

presenting a natural, and therefore more pleasing, appearance when completed. In making the pond the ground should be excavated to the depth of about 3ft., afterwards covering the interior throughout with a gin. course of brick, stone, or well-made concrete. The surface should be smoothly finished off with about an inch in thickness of good cement, so as to ensure it being perfectly watertight. This would when finished afford a depth of from 2ft. to 2½ft., which would be sufficient for the accommodation of Aquatics suitable for introducing into a pond of this description. The margin should be constructed so as to appear as a part of the rockery, and by the careful concealment of all artificial work its effect would be the more satisfactory. Permanent beds formed of brick or stone, about 2ft. 6in. square and 12in. deep, might be built in the pond at equal distances apart, in which to plant Water Lilies; and around the inside against the wall other beds might be constructed for the reception of some of the smaller-growing ornamental Aquatics. Water is frequently associated with a rock-garden in some shape or form, and where it is adjacently present would form the source from which a supply might be obtained; but providing this is not the case, or the supply be inadequate, it will be necessary to introduce it through water-pipes from another source, the inlet being masked by rockwork, presenting a natural appearance. At the lowest end of the pond the overflow might be allowed to escape in such a manner that in its course it would permeate the ground, and so afford a favourable situation for planting some of the many choice bog-loving plants.

TANKS.—In gardens of limited space brick, stone, or concrete tanks about 2½ft. in depth might be constructed, and these, if built entirely in the ground with the walls gradually sloping outwardly at the top, will minimise the risk of their being damaged during a long spell of severe frosty weather. The thickness of the walls would largely depend on the size of the tank, but for those from 25ft. to 30ft. in diameter, walls of the same thickness as recommended for the pond in the rock-garden would be sufficiently strong, and the beds for the reception of the plants might be of a corresponding size to those described in that instance. As previously stated, a sunny position should be selected, and the site and formation of a tank of this description should be carefully considered in connection with the surroundings. In its construction a natural effect should be aimed at as far as possible, so that it will not present a too formal appearance. For example, a suitable position in the flower-garden might be available for the purpose, and if a border of some ornamental, compact, dwarf-growing plants were formed around the outside, or a little low rockwork substituted as an edging, upon which plants adapted for such a position might be grown, this would greatly add to its effect.

A supply of water might be laid on by means of pipes, to which a valve should be fitted, so that the volume of water entering the tank may be regulated. The higher the mean temperature at which the water can be maintained in the tank the more generally beneficial will it be for the plants. Only sufficient fresh water need be allowed to enter to prevent stagnation. An efficient outlet is also a necessity, and this should be situated at the intended water-level line to prevent any appreciable fluctuation. In favour of tanks it may be urged, without in any way depreciating the value of ponds, that they afford better facilities for more closely viewing the beauty of the Water Lilies than is the case when the plants are situated in large pieces of water.

Ordinary tanks or fountain basins, where they already exist, if of sufficient depth and dimensions, as previously stated, would be available, although their stiff, artificial appearance makes them less pleasing to the eye in comparison with those which are designed on more natural lines. In the case of fountain basins choice plants should not be allowed to occupy positions where sprays of water would be continually falling upon them when the fountain is playing.

PLANTING.—Before planting a naturally-formed piece of water it will be obvious that precautions should be taken to effectually eradicate any coarse-growing vegetation that may have become established therein, and which might prove detrimental to the plants, or mar their effect. In water of this description, where a deposit of several inches of mud has accumulated, very little difficulty will be occasioned in establishing the plants if due care be taken to make their roots secure when the planting operation is in progress. But should the bottom be of a gravelly nature, or otherwise unsuitable to their requirements, then mounds of soil, consisting of good, rich, heavy loam of a tenacious nature, with about one-third of well-decomposed cow- or stable manure, to which a little leaf-soil might be added, although not absolutely necessary, and the whole thoroughly incorporated, should be deposited for their reception. This observation also applies to the planting of artificial ponds, unless it be intended to grow the plants in submerged tubs or boxes—a plan, however, which, in respect to a pond of any large extent, cannot be recommended as being more satisfactory than that of planting them out on mounds.

Where it is inconvenient or undesirable to lower the depth of the water sufficiently to allow of the planting of Aquatics directly into the mud, or mounds of soil, in which they are to grow, a good method to adopt is to plant them firmly in similar soil to that recommended above, in baskets about $2\frac{1}{2}$ ft. in diameter and from 6in. to 9in. deep—what are known as small nursery rounds would answer the purpose. This operation should be performed

as expeditiously as possible, afterwards lowering the baskets from a punt or a raft into the positions the plants are to occupy, whether on the bed or on the mounds of soil, as the case may be. When the baskets become decayed, or even before, the roots will be found to have penetrated through, and have taken possession of the mud or soil below, attended with a corresponding vigorous growth of the entire plant. In the case of *Nymphæas*, only strong, healthy plants should be submitted to this treatment. Small plants should be nursed in shallower water, or where they would be under close observation until sufficiently strong to be transferred to deeper quarters. In the case of small plants it is advisable to remove the flower-buds as they appear, so that their vigour may be concentrated in making an unchecked growth. The compost recommended to be used for planting in the above instance would be that which would also be found to meet the requirements of those grown in all circumstances where beds, tubs, or boxes are used for their reception, provided a minimum depth of gin. of same be allowed for them to develop as much root growth as possible. This compost would also serve for the purpose of renovating the surface whenever necessary, and this operation is invariably attended with good results if done before each season's growth commences.

In planting a water garden where sufficient space exists for the inclusion of a representative collection of the most ornamental Aquatics, it may be made all the more attractive by a judicious disposition of the plants according to their individual characteristics, more particularly with respect to their habit of growth. For instance, there are those kinds whose leaves float on the surface of the water, amongst which are included the beautiful Water Lilies and the sweet-scented Water Hawthorn; whereas other kinds assume a more or less tall and erect habit, as, for example, the Flowering Rush and the Bog Bean. Then there are those the foliage of which is entirely submerged, but which produce their flower-scapes above the surface of the water, such as the pretty Water Violet, the Water Soldier, and the interesting Bladderworts, besides numerous other equally desirable and pretty subjects that thrive luxuriantly at the water's edge, where their roots can revel in an abundance of moisture.

The most suitable time for planting hardy Aquatics is about the beginning of April, or as soon as they commence active growth, thus affording a long-growing season in which to get established. Of course it may be desirable afterwards to introduce a few plants in the shape of new acquisitions, to fill up spaces where plants may have failed, or to introduce a few tender kinds during the summer months which require the protection of a greenhouse during the winter; but for the general planting, the time stated above is invariably the most advantageous. It is also very important that due consideration should be given to

the arrangement of the plants, for the nearer imitation approaches Nature the more does it attract and delight. Where practicable, and circumstances are favourable to planting in groups of one sort, this style is the most suitable to adopt, as it presents a bolder and a more natural effect than when planted singly. In ponds, the groups, more especially those with floating leaves, should be separated from each other by clear open spaces of water, so that when in full growth their beauty will be better displayed, and the surface will not present the appearance of being too much covered with foliage, which would have a too decidedly monotonous effect.

NYMPHEAS. The various lovely-coloured flowers of the beautiful new hybrid Nymphaeas, which only a few years ago were undreamt of, now furnish a variety of colours that were previously entirely wanting in hardy floating Aquatics. In describing the colours of the flowers it should be borne in mind that under varying climatic conditions and exposures, as well as according to the earliness or lateness of their flowering, the colours of some of them present much variation. Unlike the Lotos section of tropical Nymphaeas, which includes so many handsome kinds, the flowers of which expand at night and are closed during the day, all the kinds from temperate climates, including Marliac's beautiful hybrids, are day-flowering. The duration of the flowers in both cases is the same as they appear in varying beauty for a period of three successive days or nights, when their flowers, whether fertilised or otherwise, sink below the surface of the water.

To admit of a selection of Nymphaeas being the more readily made, the under mentioned list is presented in two groups, the first of which includes kinds possessing the most vigorous constitutions and that require the greater space and deeper water in which to grow. The sorts in the second group are much less vigorous in growth, and are better suited for locating in shallower water. They are also adapted for planting in tanks and fountain basins.

General Collection.—Group I.—*N. alba*, our native white Water Lily, is so well known that it would be superfluous to give a detailed description of it. Although its freedom of flowering is surpassed by some of the hardy hybrids, it still holds its own in public

favour. *N. a. candidissima* has larger blossoms of the purest white, flowers more freely, and is more effective in every way than the type. *N. Marliacea alba* (Fig. 197), hybrid, is one of the finest of all hardy Water Lilies. The flowers are very large, of good shape, white, with a slight tinge of pink at the base of the sepals and outer petals, slightly scented, and produced with remarkable freedom, vigorous growers. *N. M. carnata*, a hybrid, is somewhat similar in habit to the preceding, but the white flowers are delicately suffused with pale pink. *N. M. chromatella* is one of the most beautiful of all hardy Nymphaeas. The flowers are clear yellow, and are produced continuously throughout the summer and late into the autumn, while the deep green leaves are prettily blotched with dull reddish-chocolate; is a vigorous grower, and may be increased by divisions of its tuberous rootstock. This is one of the earliest of Marliac's hybrids, and is also grown under the name of *N. tuberosa flavescens*. *N. M. rosea* is similar to *N. M. carnata*, but the flowers are a trifle smaller and their colour a shade deeper. *N. nitida* (Siberian Water Lily) has pure white cup-shaped flowers of medium size, and is one of the earliest to blossom; somewhat similar to *N. alba*, but less vigorous, and does not increase so rapidly. *N. odorata sulphurea*; this and the following are quite distinct from any of the other hybrids in the *odorata* group. Although they are the very latest to commence flowering, they provide a striking contrast by their more vigorous growth, by the size of their flowers, and by the freedom with which they are produced. The flowers are sulphur-yellow, very fragrant, of the largest size, and have long, narrow-pointed petals, which give

them a very attractive appearance. The leaves are heavily marked with dull reddish-chocolate. *N. o.s. grandiflora* resembles the preceding in every particular excepting that the flowers are a trifle larger and have a greater number of petals, which give them a more double appearance. *N. tuberosa*, a North-American species, with large

Group II.—*N. caroliniana nivea*, hybrid, has large, fragrant, white flowers, with numerous long, narrow petals. *N. c. perfecta* is similar to the preceding, but soft pink. *N. Laydekeri fulgens*, a fine hybrid, having brilliant purplish-rose flowers, with bright orange stamens. *N. L. lilacea*, a hybrid, having flowers of medium size,



FIG. 197.—*NYMPHAEA MARLIACEA ALBIDA*.

white flowers, of good shape, and faintly scented; probably the most vigorous of any of the hardy *Nymphaeas*; it also increases rapidly by tuberous offsets, easily detached from the creeping rootstock. For this reason it is unsuitable for planting in very small ponds or tanks, unless the roots are confined to restricted limits. *N. t. rosea* is a very desirable variety of the preceding, the colour of the flowers being of a pleasing tint of pale rose; it is, however, not so vigorous in growth as the type.

very freely produced, and of a rosy-lilac, with orange stamens. *N. L. purpurata*, hybrid, is more vigorous in habit than the preceding, and very attractive and free-flowering; the blossoms are of medium size, purplish-red, with deep orange stamens, and very fragrant. *N. L. rosea* is one of the most effective of the small-growing hybrids. It produces rosy-pink flowers, which deepen with age; very early. *N. odorata*, medium-sized, sweetly-scented, white flowers; the sepals and outer sepals are sometimes slightly tinged

with pink. To thrive and blossom satisfactorily this species and its varieties should be planted in the sunniest and most sheltered positions that can be chosen. *N. o. caroliniana* is a very desirable hybrid; the flowers are large and of a soft pink or flesh colour. *N. o. exquisita* is a charming hybrid of moderate growth, with fragrant flowers of medium size, deep rose shaded with carmine, and having stamens of a deep yellow. *N. o. minor* is a very small and compact-growing variety, having pure white and slightly fragrant flowers. *N. o. rosacea* is one of the most desirable in this group, and somewhat resembles *N. o. exquisita* in habit of growth, but is more robust; the flowers, which are also fragrant, are of a rosy-pink, and have deep yellow stamens. *N. o. rosea* (Cape Cod Water Lily) is similar in habit to the type; the flowers are of a rosy-pink and scented. *N. pygmaea* is the smallest species in cultivation. The flowers are pure white and sweetly scented. *N. p. helvola* is a small but exceedingly pretty hybrid, of which the preceding species is one of the parents. The fragrant flowers are pale primrose-yellow; the leaves are dark green, prettily spotted with reddish-brown.

The following *Nymphaeas* are rare and expensive at present. With the exception of *N. alba rosea* they are all hybrids raised by M. Marliac, and include some of the choicest and most beautiful kinds, as well as being vigorous growers. *N. alba rosea* (*N. Casparyi*). Swedish Water Lily, pale

rosy-pink, very early, but with a short flowering period; it is shy, and not so vigorous as the type. *N. Andreana*, hybrid, deep red slightly tinged with violet, robust, the leaves sparingly spotted with reddish-brown. *N. aurora*, hybrid, clear yellow, sometimes shaded with rose. *N. Ellisiana*, free-flowering hybrid, reddish-purple, shaded with carmine and with bright orange-coloured stamens. *N. futura*, free-flowering hybrid, yellow, slightly tinged with red, and orange-coloured stamens; the leaves are spotted with reddish-brown. *N. gloriosa*, hybrid, rich dark purplish-rose, shaded with carmine, double, fragrant, scarce. *N. lucida*, large, star-like, soft, rosy-vermilion flowers; the leaves are heavily blotched with reddish-brown. *N. Marliacea flammula*, a hybrid, amaranth-red, delicately suffused with white, and the leaves are marked with reddish-brown, robust. *N. M. ignea*, one of the very choicest of hardy Water Lilies; the flowers are large, brilliant reddish-magenta, with bright orange-coloured stamens. *N. M. rubropunctata*, deep reddish-purple, spotted with carmine, and stamens of a dark orange-yellow, vigorous. *N. Robinsoni*, hybrid, medium-sized violet-red on a yellow ground, the centre petals being deeper in colour, leaves spotted with brown, robust and compact. *N. sanginea*, one of the best hybrids yet introduced; rich dark crimson-purple, with orange stamens. *N. Seignoureti*, pale yellow, tinted with carmine-rose, is unattractive, but robust and compact.

Other Aquatics with Floating and Submerged Leaves.

In introducing other Aquatics with floating leaves, the *Nuphars*, which are botanically closely allied to the *Nymphaeas*, and of similar habit of growth, may be planted where there is a depth of water of from $2\frac{1}{2}$ ft. to 3 ft.; but they cannot be recommended for including in tanks or where the water is of very limited extent. They are vigorous-growing plants, with bold foliage, and withstand exposure without suffering much injury; for this reason they are well adapted for situations in lakes and ponds where it would be difficult to establish more conspicuous flowering Aquatics of less vigorous habit. In choosing kinds that require a less depth of water in which to permanently establish themselves, the chief requirements in most cases will be met by making a

selection from the most striking species in the following list, which likewise embraces those with submerged leaves :

ALISMA. See Elisma.

APONOGETON DISTACHYON (Cape Pond Weed or Winter Hawthorn). One of the most desirable of floating Aquatics; it blossoms the greater part of the year, and the forked inflorescence and showy white bracts are deliciously Hawthorn-scented. It prefers a position where there is a gentle current of water, and increases rapidly by means of its tuberous offsets.

BRASENIA PELTATA (*Hydropeplis purpurea*) (American Water Shield). A handsome little plant with oval-shaped peltate leaves and small purplish-coloured flowers.

ELISMA NATANS (Floating Water Plantain) is a rare British plant, of small and neat habit of growth, and bears showy three-petalled white flowers.

HOTTONIA PALUSTRIS (Water Violet) (Fig. 198). One of the most beautiful of our native Aquatics. It has finely pinnate submerged leaves. The scapes rise above the surface of the water to a height of about 12in., and bear whorls of several pretty rosy-lilac coloured flowers.

HYDROCHARIS MORSUS - RANEÆ (Common Frogbit). An elegant little plant, with small kidney-shaped leaves and three-petalled white flowers.

HYDROCLEYS COMMERSONI (*Limnocharis Humboldtii*) (Water Poppy). A neat-growing, tender Aquatic, with pale yellow flowers, very effective for introducing in shallow water during the summer months, but requires the protection of a greenhouse in the winter.

LIMNANTHEMUM PELTATUM (*Villosaria nymphaeoides*) (Fringed Water Lily). A free-growing, ornamental British plant, having small Water Lily-like leaves and pretty yellow flowers, the segments of which are fimbriated, giving them a very attractive appearance. It increases rapidly; therefore precaution should be taken in planting it, or it may encroach on other plants.

MYRIOPHYLLUM PROSERPINACOIDES (Water Milfoil or Parrot's

Feather). A free-growing tender Aquatic. Its stems are densely covered with very finely-cut leaves, presenting a pretty feathery appearance as they float on the water. Not sufficiently hardy to withstand a severe winter.

NUPHAR ADVENA. A North American species having large peltate leaves and yellow flowers, with reddish-coloured anthers, standing well above the surface of the water. *N. lutea* (Fig. 199) is the well-known yellow



FIG. 198.—HOTTONIA PALUSTRIS.

Water Lily of our ponds and rivers. *N. pumilum* (*N. Kalmiana*) is a rare

British species, with yellow flowers, and much smaller in all its parts than either of the preceding.

leaves then rising above the surface of the water. It increases rapidly, and therefore should be kept under close



FIG. 199.—*NUPHAR LUTEA*.

ORONTIUM AQUATICUM (Golden Club). An Aquatic belonging to the Aroid family, with pretty, deep-green, velvety-looking, lanceolate-ovate-shaped leaves, which are floating or erect, according to the depth of water. The long-stalked spadix is covered with numerous very small flowers of a yellowish colour.

STRATIOTES ALOIDES (Water Soldier). An inhabitant of our ponds and slow-running waters. The plant—a rosette-like tuft of leaves—resembles a small-growing Aloe, and is usually entirely submerged, only floating when it is in flower, the tips of the

observation, or it may intrude itself where not wanted.

TRAPA NATANS (Water Caltrops; Water Chestnut). A desirable Aquatic, of annual duration, with peculiarly-shaped four-horned fruits. The leaves have swollen petioles, and are arranged in the form of a rosette.

UTRICULARIA VULGARIS (Common Bladderwort). An interesting little British plant, having very finely-divided, submerged leaves, which are furnished with minute vesicles, or air-bladders. The pale yellow flowers are borne on scapes, which rise about 6in. above the surface of the water.

Erect-Growing Aquatics and Sub-Aquatics.

When planting on the margins of ponds, tanks, or water-courses, advantage should be taken of the most suitable spots for the introduction of such subjects as are best fitted for them; and this may be determined by a consideration of their heights and habits of growth. The stronger growing kinds are best adapted for locating in the more exposed situations, and these should not be allowed to extend to the areas provided for those of less robust habits. None of the plants included in this group require any special preparation of soil, provided a good depth of mud is present; but if this is not the case soil of a similar nature to that previously recommended should be deposited for their reception.

For the guidance of those who are not familiar with this class of plants, the following list may be of service in making a selection :

ACORUS CALAMUS (Sweet Flag). This well-known plant of our river-sides is a very desirable subject for planting in exposed situations where ample space can be afforded. Height about 3ft. *A. C. aurea striata* is similar in habit to the type, but more effective, the long narrow leaves being prettily striped with golden-yellow. *A. gramineus* (Grass-leaved Sweet Flag) is a dwarfer and more slender-growing

British Aquatic has pyramidal panicles of small, delicate rose-coloured flowers, which present a very light and graceful appearance. Height about 2½ft.

BUTOMUS UMBELLATUS (Flowering Rush). This handsome British plant is one of the most ornamental of hardy Aquatics. The showy flowers, which are produced in umbels on long, stout scapes, are borne well above the

FIG. 200.—*MENYANTHES TRIFOLIATA*.

species with very narrow leaves. Height about 1½ft. *A. g. variegatus* resembles the type, but the leaves are handsomely striped with white.

ALISMA PLANTAGO (Common Water Plantain). This free-growing

foliage, and are of a rosy-lilac colour. Height from 3ft. to 4ft. .

ing stems and erect cordate-shaped leaves. The showy part of the in-

florescence is the white flat spathe. Height about 6in.

CLADIUM GERMANICUM (*C. Mariscus*) (Mash Saw Grass). A handsome, tall-growing British plant, belonging

plant, with short and compact racemes of small yellow flowers. Height about 2ft.

MENYANTHES TRIFOLIATA (Bog or Buck Bean) (Fig. 200). A very orna-



FIG. 201.—*PONTEDERIA CORDATA*.

to the Sedges. The long, rigid, glaucous green leaves are deeply keeled, and very sharply serrated at the edges. Height 4ft. to 5ft.

IRIS PSEUDACORUS (Yellow Flag). This is very suitable for exposed situations; height about 3ft. *I. p. variegatus* is similar in habit to the type, but the leaves are beautifully striped with white.

LYSIMACHIA THYRSIFLORA (Tufted Loosestrife). A close-growing British

mental dwarf-growing British Aquatic. The handsome flowers, the segments of which are finely simbriated on the inside, are white, tinged externally with delicate pink, and are borne on erect scapes about 9in. in height.

PELIANDRA VIRGINICA (Arrow Arum). An Aquatic of the Aroid family, with hastate leaves. The flowers are thickly set on a short spadix, or flower-spike, which is surrounded by a greenish-coloured spathe. Height about 1½ft.

PHRAGMITES COMMUNIS (Common Reed). A very graceful plant of vigorous habit, and the largest of the British grasses. Its large handsome panicles are of a dull purplish colour. Height 6ft. to 10ft.

PONTEDERIA CORDATA (Pickerel Weed) (Fig. 201). An elegant erect-growing plant, with heart-shaped leaves on long petioles. The flower-spikes, which are freely produced, bear numerous small pretty blue flowers, closely set together. This should be included in all collections of choice Aquatics. Height about 2ft.

RANUNCULUS LINGUA (Great Spear-wort). A vigorous-growing British plant with bright yellow flowers. Height about 3ft.

ethiopica), the Lily of the Nile, or Arum Lily, forms a very effective feature in the margin of a pond. A sunny, sheltered situation should be selected, and the crowns of the plants submerged sufficiently deep in the water to prevent them from becoming frozen. Although the first severe frost will cut the plants down, they will nevertheless restart into growth in the spring.

SAGITTARIA SAGITTIFOLIA (Common Arrow-head). This well-known British plant, with its handsome sagittate leaves, and scapes of showy

white flowers, is a very desirable subject for the water garden; height about 2ft. *S. s. flore-pleno* is less vigorous in habit than the type, but has handsome double white flowers; height about 1½ft.

SCIRPUS LACUSTRIS (Common Bulrush). This vigorous-growing British plant has tall cylindrical tapering stems which produce a very striking effect. Height about 6ft.

TYPHA ANGUSTIFOLIA (Lesser Reed Mace). An elegant tall-growing British plant with long narrow leaves; the long, cylindrical flower-spikes are densely packed with minute brownish-coloured flowers; height about 6ft. *T. latifolia* (Great Reed Mace or Cat's Tail) is a very familiar plant of our

which it grows and increases only admits of its being planted on the margins of large pieces of water; height 6ft. to 7ft. *T. Laxmanni* (*T. minima*) much smaller

the preceding short, forming ovoid or globular-shaped heads. It is a very graceful-growing plant, and well adapted for the margins of small ponds and tanks; height about 2ft. *T. stenophylla* (Slender Reed Mace) is a slender-growing plant, more vigorous than the preceding, but equally ornamental. Height about 3½ft.

Plants for the Waterside.

The size and shape of a piece of water are to a great extent the determining factors in the selection of the plants to introduce and the positions they are to occupy. For example, in planting the sides of large or moderate-sized ponds, large and vigorous-growing plants may be introduced; where the ground rises prominently or projects into the water these situations should be furnished with those kinds that would produce the boldest and most striking effect. As previously stated, groups of a sort should be formed in preference to arranging a thin line of plants of various kinds around the pond, as the latter scheme would produce a less natural and satisfactory appearance. Groups of tall-growing plants should be judiciously interspersed with those of dwarfer habit, thus giving an irregular and also a more artistic effect. For the sides of small ponds or where space can be afforded around tanks or fountain basins only

plants of medium height and moderate growth should be introduced, a variety of which may be selected from the kinds enumerated hereunder, all of which are well adapted for such positions.

FOLIAGE PLANTS. Conspicuous amongst waterside plants that are valued chiefly for their ornamental foliage are the giant Gunneras, *G. chilensis* (*G. scabra*) and *G. manicata*,

showy. *Acanthus mollis* and its more handsome variety *latifolius*, *A. spinosissimus*, and *A. spinosus*, are all elegant, bold-foliaged plants, and produce showy, erect spikes of flowers.

The compact-growing Fungiæ, *F. Sieboldiana*, with its pretty glaucous foliage, *F. orata*, and its handsome variegated variety *marginata*, are all desirable subjects, and their pale lilac-coloured flowers are also very effective.

Where space can be afforded the tall-growing *Polygonum*, *P. sachalinense* and *P. cuspidatum*, are strikingly handsome, but they increase very rapidly; therefore precaution should be taken in locating them to prevent their overrunning other things. *Podophyllum Emodi* and *P. peltatum* (Fig. 202) are handsome dwarf-growing plants, with orbicular, peltate, five- to nine-lobed leaves; a shady situation and peaty soil suit them admirably. *Rodgersia podophylla* has handsome, large, long-stalked, palmately-lobed leaves of a pretty pale bronzy colour; the panicles of yellowish-white flowers are also very attractive.

The graceful-growing Horsetails, *Equisetum sylvaticum* and *E. Telmateia*, are British plants with erect-growing stems bearing numerous whorls of long slender branches, the latter being the taller and more vigorous grower; they are very effective for shady situations. The pretty Creeping Jenny, *Lysimachia Nummularia*, and its golden-leaved variety *auræa*, are charming little plants for covering the moist banks of the water.

with large, bold, cordate leaves, from 5ft. to 8ft. in diameter. The handsome Rheums, *R. Emodi* and *R. palmatum*, are bold and effective plants, the former with broad ovate leaves, and the latter with cordate leaves, deeply incised at the margins; their tall inflorescences are also very

water's edge. *Scirpus Holoschoenus variegatus* and *S. Tabernæmontani zebrinus* are very effective variegated plants of moderate height, having erect, cylindrical stems, transversely banded with green and white, and are excellent subjects for a position close to the margin of the water. A similar situation also suits the Spiral Rush (*Juncus*

effusus spiralis), which is an interesting plant, with curious corkscrew-like stems.

The following are giant members of the Grass family of very graceful and effective habit : *Miscanthus japonicus*, better known as *Eulalia japonica*, and its handsome variegated varieties *foliostriatis* and *zebrinus*, are tall, elegant subjects, with large plumose panicles of purplish flowers ; their beauty is best displayed when planted close to the water's edge.

The tall *Arundo Donax*, and its variegated variety, *A. D. versicolor*, are strikingly handsome plants, the latter being the tenderer and less vigorous, but both should be situated in sheltered, sunny positions, and their crowns protected in winter. *Panicum virgatum* is a very ornamental plant, of erect and robust habit, producing large branching panicles of flowers.

The well-known Ribbon Grass (*Phalaris arundinacea variegata*), with its prettily striped leaves, is a very effective plant for the waterside. In sheltered, sunny situations the stately-growing *Erianthus Ravenna* could be introduced with good effect, its bronzy-coloured foliage being very attractive.

The well-known Pampas Grass, *Cortaderia argentea* (*Gynerium argenteum*), with its long glaucous green leaves and handsome silvery panicles of flowers, is a very desirable subject to introduce ; as is also the North American Grass (*Uniola latifolia*), with its broad flat leaves and graceful panicles of flowers. In the background, in drier situations, groups of the stately-growing Bamboos might be introduced with very telling effect.

Amongst Ferns may be mentioned the Flowering or Royal Fern (*Osmunda regalis*) and its pretty crested variety *cristata* ; the handsome Ostrich Fern (*Onoclea germanica*) and *O. sensibilis* ; and the common Harts-tongue Fern (*Scolopendrium vulgare*) and its numerous beautiful varieties. All of these are of vigorous growth and delight in moist, shady situations.

FLOWERING PLANTS. The following is an enumeration of waterside subjects having the greatest merit as flowering plants, their various coloured blossoms imparting additional life to their surroundings. Amongst the foremost of these are the handsome

herbaceous Spiræas, *S. Aruncus*, *S. camschatcica*, and *S. lobata*, all being vigorous-growing plants, with large and graceful inflorescences of whitish, or, in the last-named species, deep rose-coloured flowers. Of much less vigorous growth, but equally as beautiful, are *S. astilboides*, *S. Ulmaria*, and *S. palmata*, the former two with panicles of whitish, and the last with bright crimson-coloured flowers.



FIG. 203.—*IRIS LÉVIGATA*.

Astilbe rivularis, the habit of which resembles some of the Spiræas, has large handsome panicles of yellowish-white flowers ; it grows freely close to the water's edge.

The Purple Loosestrife, *Lythrum Salicaria*, and its varieties *roseum* and *superbum*, are desirable plants that grow vigorously when their roots are close to the water. A similar situation also suits the free-flowering and vigorous-growing *Epilobium hirsutum*, *E. angustifolium*, and the pretty white *E. a. album*. The Swamp Milk Weed, *Asclepias incarnata*, with its umbels of pretty pink flowers, delights in a situation close to the margin of water; a position that also meets the requirements of the well-known Marsh Marigold, *Caltha palustris*, and its double-flowered variety, *C. p. monstrosa*, their rich yellow flowers being very effective.

Iris laevigata (*I. Kampferi*) (Fig. 203) and its many beautiful forms thrive when situated in a sunny position with an abundance of moisture at their roots. *I. Monnierii* is a very showy plant, of vigorous habit, with large lemon-yellow-coloured flowers, and there are other species and varieties of the genus which might also be introduced with advantage. The well-known Solomon's Seal, *Polygonatum multiflorum*, is a decidedly handsome plant for moist, shady situations; so are the beautiful *Primula japonica* and *P. sikkimensis*, groups of these plants when in blossom producing a most charming effect. The vigorous-growing *Saxifraga peltata* and *S. purpurascens*, with their bold foliage and handsome pale pink and purple-coloured flowers, are desirable subjects for moist, sunny situations.

The common Forget-me-Not, *Myosotis palustris*, is a delightful plant for wet situations, as is also the pretty little Grass of Parnassus, *Parnassia palustris*, which thrives best in a peaty soil. *Lysimachia clethroides* and *L. vulgaris* are handsome moisture-loving plants, the latter thriving best in a shady position.

The Globe Flowers, *Trollius europaeus* and *T. asiaticus*, are very effective; as are also the free-flowering Cardamines, *C. pinnata* and *C. pentaphylla*, the latter being shade-loving plants.

Clumps of the American Swamp Lilies, *Lilium superbum* and its variety *carolinianum*, and *L. pardalinum*, are conspicuous and handsome subjects, preferring a moist, peaty soil and partial shade; and similar conditions are favourable to the well-doing of the pretty dwarf-growing *Trillium grandiflorum*. The tall and stately-growing herbaceous plants, *Bocconia cordata* and *Mecomopis Wallichii*, are very effective; so are also the vigorous-growing Day Lilies, *Hemerocallis flava*, *H. fulva*, and the double-flowered and variegated varieties of the last-named species.

The handsome Yuccas, with their tall, branching panicles of showy white flowers, and the vigorous-growing *Kniphofias* (commonly known as *Tritomas*), with spikes of brilliant red, yellow, or orange-coloured flowers, are amongst the best for affording a bold and handsome effect.

CHAPTER IX.

FRUIT.

Its National Value and Importance—Apples—Apricots—Blackberries—
Cherries—Chestnuts—Crabs—Currants—Damsons—Figs—
Gooseberries—Grapes—Medlars—Melons—Mulberries—
Nectarines—Nuts—Peaches—Pears—Plums—Quinces—Raspberries—Strawberries—Walnuts—Animal and Fungoid and other
Pests.

UNTIL within a very recent period the national value and importance of fruit culture have not received that attention their merits warrant. The consequence is that thousands of worthless varieties are occupying ground that could be far more remuneratively employed. In the gardens of both rich and poor, as well as in large and small orchards, this plethora of varieties is much in evidence throughout the whole country, and in the interests of both producer and consumer of fruit, it is high time that cultivators should exercise the greatest care in the selection of the varieties they plant, and that those selected are of the very best. These remarks apply alike to the private and the market grower, as it must be palpable to all that a small collection of any kind of fruit in those varieties which are known to possess high quality, good appearance, and a fruitful habit, are far more satisfactory than a multitude of sorts, many of which are practically worthless. In the following pages we shall endeavour to indicate which are the best varieties of each kind of fruit, both for home consumption and for market purposes, giving brief hints on their cultivation on different soils, and their general routine management. For convenience of reference, each kind of fruit is placed in alphabetical order.

Apples.

No fruit is so extensively grown (or even so largely imported) as the Apple, and it may justly claim the title of "King of British Fruits," being accommodating enough to keep practically all the year round, and also growing and fruiting more or less freely over the whole of the kingdom. Because of its well-known success in so many diverse parts of the country, some have looked upon the Apple as a tree that will fruit almost anywhere, and have acted accordingly by planting it in wet, undrained positions more suited to Willows or to Alders. The ground for all fruit-trees should be drained if the natural drainage is imperfect, especially if the soil is heavy and cold. Drainage renders the soil friable, as well as cool in summer and warm in winter. It cannot be too widely known that stagnant water is fatal to good results in fruit culture, and Apple-trees planted in badly-drained soil become preys to lichen, insect, and other pests, until at last they die, never having borne as many Apples as would pay for their first cost.

Circumstances, of course, must determine not only the position or aspect, but also the most suitable form of tree, mode of planting, and the best varieties for the district. Many gentlemen's seats are high and exposed to gales, until forest trees that have been planted to give shelter have attained sufficient height to break the violence of the wind. In such cases bush or dwarf trees are the most suitable; but if the place is already formed and not much exposed to rough winds, standard trees could be planted in the park or grounds, shrubberies, &c., where they would produce a charming effect when in blossom, and be of great service in filling the fruit-room in the autumn. Very much indeed may be accomplished at a trifling cost by the employment of fruit-trees to produce effect, the only outlay being the purchase and planting of the trees, and their protection afterwards from rabbits or cattle.

In the garden only bush, pyramid, or trained Apple-trees ought to be grown. The standards or half-standards are not only too large, but they shade too much of the ground, making it impossible to grow vegetables near them. The bush is one of the best forms of all, as it is of a pleasing shape, and as a rule bears good and regular crops. The pyramid is a formal tree, and the close pruning necessary to keep it in correct shape is not the best mode of obtaining good crops. Espaliers produce fine handsome fruit, but a number of years is required to make well-proportioned trees. The same applies to all the various forms of fancy trained trees, and they cannot be recommended for general utility. Cordons may, however, be excepted, as they may be utilised in many ways, as indicated under their heading.

The best time to plant all fruit-trees is early in November. If the land is heavy, the trees may be placed on the surface, no excavation being made, and the roots covered with soil, thus forming a mound of soil over the roots, which are all above the ground-level. Trees thus planted usually succeed very well if properly staked immediately after planting, and mulched for the first year with strawy manure. On lighter or warmer land, holes should be excavated according to the depth necessary to cover the roots; the sides and bottom of the hole should be well broken to allow water to pass away freely and to permit of the roots penetrating into the surrounding soil. Deep-planting should be guarded against, as the nearer the roots are to the surface, the better for the future welfare of the tree. No time ought to be lost in properly securing the tree in position after planting, thus preventing any shifting or rocking about by wind, which would delay its root-action or establishment. Many grave mistakes have been made in planting dwarf and half-standard Apple-trees deeply to avoid the expense of staking: such trees are seldom, if ever, satisfactory, and it would have been far more economical to plant properly, and stake the trees until firmly established in their positions.

Standard Trees.—The country seat of a gentleman can scarcely be termed complete without an orchard, and if this is planted with first-class sorts it will prove most valuable to the occupier or owner by producing good crops most years. Sometimes climatic influences will destroy the greatest promise of fruit at the blossoming period; but it must be a bad season indeed that will cause all the fruit-trees to be barren. Where cattle are admitted to the orchard it is advisable to have all trees with a stem at least 6ft. from the ground to the branches. Immediately after planting, the trees ought to be securely fastened to stout stakes, employing grass bands or old pieces of hose-piping to prevent the ties from cutting into the young stems, and thus injuring them. It will also be necessary to protect the trees with wooden or iron guards, otherwise sheep, cattle, or ground game will devour the bark, and kill every one. If planted as already advised, and mulched with strawy manure for a year, little attention is afterwards required beyond the timely removal of all shoots that cross or rub against each other, and the cutting away of small branches if very congested. It may also be necessary to cut back one or more shoots that rush into growth far ahead of others, and which if permitted to grow on unchecked would throw the tree into a bad shape. The point to aim at is to grow an even and well-balanced head through which a fair amount of light and air can penetrate, and thus mature the wood properly.

On heavy soils the following varieties succeed very well, and they also answer in cold or somewhat exposed positions.

Culinary: Ecklinville Seedling, Lord Grosvenor, Improved Keswick Codlin, Haworthden, Newton Wonder, Northern Greening, Dumelow's Seedling, Alfriston, Bramley's Seedling, Nancy Jackson, Yorkshire Beauty, and Tower of Glammis. *Dessert*: Duke of Devonshire, Cockle Pippin, James Grieve, Worcester Pearmain, King of the Pippins, Lemon Pippin, Ashmead's Kernel, Lord Burghley, Court Pendu Plat, Pearson's Plate, Sturmer Pippin, and Egremont Russet.

On sandy loam or warm soils the following are reliable varieties. *Culinary*: Beauty of Kent, Bismarck, Blenheim Orange, Bramley's Seedling, Bess Pool, Cox's Pomona, Ecklinville Seedling, Emperor Alexander, Gascoyne's Scarlet, Golden Noble, Mère de Ménage, Newton Wonder, Peasgood's Nonsuch, Hornead Pearmain, Tyler's Kernel, Warner's King, Wagner, and White Transparent. *Dessert*: Chatley's Kernel, Col. Vaughan, Cox's Orange Pippin, Duchess of Gloucester, Ross Nonpareil, Worcester Pearmain, King of the Pippins, Quarrenden, Roundway Magnum Bonum, Egremont Russet, Wealthy, and Yellow Ingestre.

All the above are valuable, either as full or as half-standards for planting in orchards, or in parks or shrubberies for ornamental purposes. They are likewise suitable for home consumption or for the market, and the great majority will produce fruit sufficiently large and handsome for the exhibition table. Thirty feet apart each way is a suitable distance between the trees.

Dwarf or Bush-Trees.—For the private garden or for market purposes the dwarf or bush Apple-tree is one of the best and most profitable forms that can be planted when worked upon the English Paradise stock. The Crab is also a good stock on light soils, but, taking all kinds of soil, whether heavy or light, our experience is strongly in favour of the English Paradise for all dwarf-growing Apple-trees. Such trees produce heavy crops of large handsome fruit if adequately supplied with manure when fruiting, and they will continue in a productive state for many years when properly managed. It should be remembered that this Paradise stock makes a mass of fibrous roots in a limited area; consequently it is essential to success that the trees be liberally manured when cropping heavily.

The following are of proved value, being free bearers and of good constitution. *Culinary*: Beauty of Kent, Belle de Pontoise, Bielo Borodawka, Bismarck, Byford Wonder, Bramley's Seedling, Cardinal, Manks Codlin (a great bearer on all soils), Cox's Pomona, Duchess of Oldenburg, Ecklinville Seedling, Gascoyne's Scarlet, Golden Noble, Golden Spire, New Haworthden, Lane's Prince Albert, Lord Grosvenor, Newton Wonder, Peasgood's Nonsuch, Potts' Seedling, Queen Caroline, Stirling Castle, Warner's King, and White Transparent. *Dessert*: Allen's Everlasting, Beauty of Bath, Chatley's Kernel, Cox's Orange Pippin (the finest dessert Apple in cultivation), Early Peach (new),

James Grieve, Lady Sudeley, King of the Pippins, Quarrenden, Rosemary Russet, Sturmer Pippin, and Worcester Pearmain. All the above will also succeed on espalier or other forms of trained trees, and if well grown, and the fruits are stored in a suitable room, they will afford a succession of both culinary and dessert Apples all the year round. Any good fruit catalogue will give particulars as to season of ripening and description of the size and colour of the fruit.

The pruning of dwarf or restricted trees varies a little according to the shape. Taking bush-trees first as the most remunerative form, it is important to lay a good foundation by so regulating the growth that the lower branches are strong, well and evenly placed on all sides, and sufficiently far apart for light and air to pass through. Any branches crossing, rubbing, or growing inwards should be cut out. The centre may be allowed to be the highest part, but no strictly formal shape is either necessary or desirable.

The pyramid-formed tree can scarcely be termed a profitable one by its greatest admirers, for though such trees bear a fair amount of fruit, yet the pruning and restriction requisite to keep them in correct form prevent a heavy crop. However, in some gardens the pyramid is planted and trained as much for ornament as for its fruit, and in training the cultivator should aim at a straight, upright, central stem, on which the branches taper upwards from a broad base to a fine point, the whole tree being rounded and of similar dimensions on each side. Any congestion of wood is best removed in summer or autumn, as one can then see where the growth is too thick. In fact, with bush, pyramid, or any other trained Apple-trees, most of the pruning may with advantage be done at the end of July or early in August, cutting away all useless shoots to within about three or four eyes of their base, and, in the case of leading or other shoots required to fill up blank spaces or form the tree, permitting them to go on unchecked. In the autumn—say in October—the spurs left at the summer pruning may with advantage be cut back to two eyes; or, if they are very crowded, a few could be cut out entirely, giving more light and space to those remaining.

In gardens bush- or pyramid-trees are usually planted round the margins of the vegetable quarters and near the gravel walks. The distance between the trees may range from 8ft. to 15ft., and should never be less than 4ft. from the edge of the walk; in fact, they would be better another 1ft. apart. In almost every garden the fruit-trees are planted too near the walks, consequently they have to be cut back severely to prevent them from growing over the walk, and what would with more room have been shapely trees become one-sided. For commercial purposes bush-trees are the most suitable and profitable, and though opinions differ as to the distance they should be planted, it will be found that 9ft.

each way is a fair distance, and is recommended by several well-known and practical fruit-growers as being the best medium between 6ft. and 15ft. apart, the former being too close and the latter too far.

Cordons.—There are a few varieties of Apples that lend themselves admirably to the cordon form of tree, annually bearing an excellent crop of fruit, and also maintaining their good health and vigour. Our experience is that the following varieties may be relied upon: Bismarck, Improved Keswick Codlin, Manks Codlin, Cox's Pomona, Calville Rouge, Cox's Orange Pippin, Duchess of Oldenburg, Ecklinville Seedling, Golden Spire, Grenadier, New Hawthronden, Lane's Prince Albert, Margil, Mother Apple, Ross Nonpareil, Worcester Pearmain, Kerry Pippin, Potts' Seedling, Egremont Russet, Stirling Castle, and White Transparent.

Cordon trees may be planted 6ft. apart by the sides of walks, and trained on wires stretched tightly from each end of the walks, the wires being 18in. above the edgings of tile or box. If *double cordons* are planted—*i.e.*, with the branch or stem running in opposite directions—12ft. apart will be a suitable distance. These cordon trees by the sides of the walks are not in the way. They impart a nice appearance to the garden, and bear useful crops of fruits. Against walls not otherwise occupied cordon Apple-trees may be planted, and as a rule the fruit produced thereon has a delicate bloom never seen on Apples that grow away from the walls. On low walls the trees may be grown at a sharp angle, thus giving a greater length; but on high ones they may be trained as upright cordons. 18in. apart will be ample for such trees planted against walls.

The pruning of cordons is a simple operation: it consists really of allowing the leading shoot to go on unchecked until it has filled its allotted space, pruning all side shoots in to three or four eyes at the end of July, and then pruning back again to two eyes in the autumn. The stock should be the English Paradise; if the Crab or free stock were used, gross wood in profusion and little if any fruit would be the result.

Apples for Exhibition.—Fruit exhibitors have done much towards the improvement of Apple culture, and have also fired many amateur and professional gardeners with a desire to become successful growers and competitors at fruit-shows. The bush or cordon tree is the best to plant for this purpose, as it commences to fruit quickly, the fruit can be thinned when there is a heavy crop, insect foes are more easily combated, and, if necessary, the roots can be supplied with liquid, chemical, or farmyard manures to assist in swelling the fruit to a large size.

The following twenty-four varieties of culinary and twelve sorts of dessert Apples will be a good selection for exhibition, being of good form, handsome, and nearly always found in

prize collections. *Culinary*: Beauty of Kent, Belle Dubois, Belle de Pontoise, Bismarck, Bramley's Seedling, Cox's Pomona, Ecklinville Seedling, Gascoyne's Scarlet, Golden Noble, Hambling's Seedling, Lane's Prince Albert, New Hawthrden, Newton Wonder, Peasgood's Nonsuch, Bow Hill Pippin, Potts' Seedling, Sandringham, Stirling Castle, Stone's Apple, Tyler's Kernel, Warner's King, Emperor Alexander, Lord Derby, and Yorkshire Beauty. *Dessert*: Beauty of Bath, Chatley's Kernel, Cox's Orange Pippin, Duchess of Gloucester, Lady Sudeley, Melon Apple, Mother (American), King of the Pippins, Red Astrachan, Ribston Pippin, Washington, and Worcester Pearmain. If three other good Apples for dessert are wanted: Red Winter Reinette, the new and excellent Allington Pippin, and also the late-keeping Blue Pearmain.

Manuring.—The proper manuring of Apple-, and, in fact, all other fruit-trees, is deserving of far more attention by large and small growers, many trees being very inadequately fed. At the same time, all manuring should be done judiciously, as it would be a grave error to heavily feed trees that are healthy, but not bearing a crop. A very safe policy is to manure them liberally immediately after they have set a good crop of fruit. The stimulant applied may be liquid from cattle-sheds or manure-heaps, somewhat diluted if very powerful. Farmyard manure, put on as a mulch, is also serviceable; so are the prepared manures sold almost everywhere. Market-growers, however, or others who have a large quantity of trees, will find it more economical to buy the ingredients separately, and mix them at home. On light soils $1\frac{1}{2}$ cwt. of muriate of potash, 4cwt. of superphosphate, and 1cwt. of sulphate of ammonia, all mixed together, is a good dressing for one acre of land planted with Apples. On heavy land 5cwt. of bone-meal, or the same quantity of basic slag, is excellent, inducing a sturdy growth, a fruitful habit, and large, highly-coloured fruit.

PESTS.—Fruit pests are extremely numerous, and correspondingly destructive. It therefore behoves the man who would be successful either as a grower for market or even for the home table to be at least acquainted with the chief symptoms of attack of the pests, both Animal and Vegetable. All that is aimed at here is to briefly deal with the commonest, making an individual fruit, as it were, a speciality. Some are easily reached through their food-plant, especially when this be foliage; but those which affect the blossoms are far more difficult. Then there are some which feed in the trunks and main branches; others which lay the small shoots under contribution, or, it may be, the buds or the bark; while one very common species is found alike on branches and roots.

Apples are amongst the most profitable fruits grown, yet, strange to say, they are beset with an extraordinarily large number of enemies. Some, like the Winter Moth (*Cheimatobia*

brumata), which, by reason of their widespread destructiveness, commonness, and the partiality they display for several other trees, are fairly well-known; but there are others, like the Apple Sucker (*Pyslla mali*), the Pith-Moth (*Laverne vinolentella*), or the Shot-Borer Beetle (*Xyleborus dispar*), which are still unknown to the great majority of Apple cultivators.

Pyslla mali is a relative of the Aphides, and a sucking insect. It is $\frac{1}{12}$ in. long, and variable as to colour, at one time red, at another green, striped or dotted with yellow, brown, or brownish-red, with a yellow abdomen. The insects are active on the wing, and are able, moreover, to leap. They are found in April, and the larvæ are wingless, and it is not until they are ready to assume the pupal state that the rudimentary wings are noticed (Fig. 204). These insects suck the young, unexpanded buds, causing them to decay; while the foliage in bad attacks assumes an unnatural yellow colour. Kerosene Emulsion sprayed on when the larvæ are hatched out is effective, repeating it in a fortnight.

Laverne vinolentella is a black moth, about $\frac{1}{2}$ in. in wing-expansile, whose caterpillars feed on Apple shoots, and in certain seasons and districts do an amount of damage. These caterpillars are pinkish, and are found from September onwards through spring. Infested shoots die away for some considerable distance, and growers are frequently at a loss to account for the attack. If the larva is discovered, shoots showing signs of drooping should be cut away and burned.

The Small Ermine Moth (*Hyponomeuta padella*) is a terrible scourge to Apple-trees. The caterpillars are hatched in autumn, and remain in that condition through the winter. In spring they live in webs (Fig. 205), and thus may be readily destroyed. The "nests" should be cut out over a pail containing an insecticide, held beneath to catch any insects which attempt to descend. Then there is a well-marked distinctive moth known as Figure of

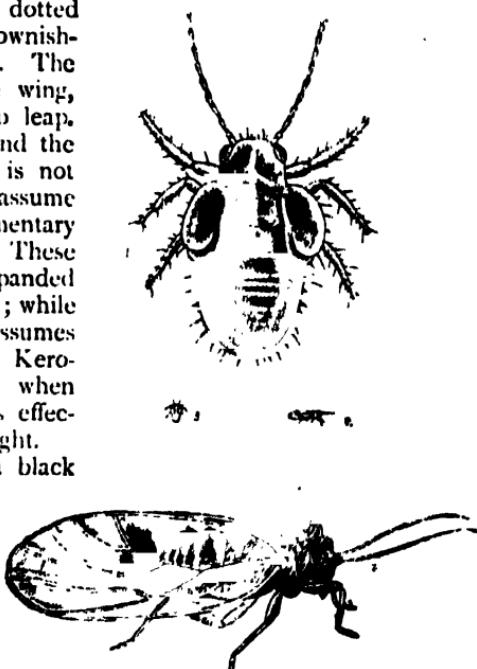


FIG. 204.—APPLE-SUCKER, SHOWING: 1, LARVA (MAGNIFIED 14 DIAMETERS); 2, PERFECT INSECT (MAGNIFIED 10 DIAMETERS); 3, LARVA (NAT. SIZE), AND 4, PERFECT INSECT (NAT. SIZE).

Eight (*Diloba caruleocephala*), in consequence of its markings on the fore-wings. The moth itself is $\frac{1}{4}$ in. in wing-expansile, and flies in September. The caterpillars emerge in spring, and attack the foliage. They are bluish-grey, with a yellow stripe on back, and another on the side, a bluish head, and black tubercular dots. Spraying with Paris Green is the best treatment for this and all other pests which chew. Sucking insects like Scale, Aphides, &c., are best dealt with by means of Kerosene Emulsion. Other pests of the Apple, but not restricted thereto, include the Lackey Moth, Vapourer Moth, Winter Moth, Codlin Moth, Goat Moth, Wood Leopard Moth, Mottled Umber Moth, Aphides, American Blight, Scales, Sawflies, Fruit-Tree Bark Beetle, Shot-Borer Beetle, Rose Chafer, Cockchafer, &c.



FIG. 205.—WEB OF CATERPILLARS OF SMALL ERMINE MOTH.

Of vegetable pests of the Apple there are comparatively few, though what they lack numerically they make up for in virulence. Canker is the commonest of the fungoid pests, though the average gardener seems averse to believe that *Nectria ditissima*, and not soil influence, is responsible for the very familiar condition popularly known as Canker. Dessert Apples of the best kind seem to suffer the worst—Cox's Orange Pippin, Blenheim Orange (so called), and Ribstone Pippin to wit. *N. ditissima* is a wound-fungus, so that care should be taken not to injure the bark in

any way. Frost and hail are frequently responsible for wounds, into which the spores of the fungus enter, and in spring the deep red perithecia may be seen without the aid of a glass. Trees badly affected ought to be uprooted and burned; while those slightly affected may have the injured parts removed, smearing the wound with tar.

Apple Rot (*Gleosporium fructigenum*) is possibly known to everyone who has eaten apples, though its cause to the majority is obscure. The fruits attacked not only have an unsightly appearance, but also a nauseous, bitter flavour. Distinct spots may be found at a comparatively early stage, though it is not until much later that the brownish, diseased, black-dotted parts are noticeable. Potassium sulphide should be sprayed on the trees once or twice when the fruit is getting of fair size, by way of prevention; while it should be resorted to directly the disease can be recognised. Infected fruits should never be stored with sound ones, but should be burned, or the whole crop stands a risk of being lost. Similarly fallings from trees should be destroyed.

Apricots.

It is a significant fact that few people care for the Apricot as a dessert fruit, but everyone thoroughly appreciates it for preserving, and the supply for that purpose is seldom equal to the demand. Unfortunately, there are many places where the trees refuse to grow, or in other gardens, even if they make good growth, they rarely produce a crop. On the other hand, in some districts they thrive splendidly, and annually bear abundant crops of really magnificent fruit, with scarcely any attention, trees against walls, and even bush-trees, being alike productive. Several theories have been propounded as to the causes of success or failure—situation, elevation, aspect, climate, &c.—but our experience is that soil is the chief factor. There is some ingredient in the heavy and light soils on which the Apricot is a success; but as to what that particular element is we are at present somewhat doubtful. Lime, in some of its many forms, is known to be very serviceable; potash, on light soils, is excellent; magnesia has also been known to prove beneficial; so has nitrogen in the form of nitrate of soda, or sulphate of ammonia. Where the trees have not been fruitful, or weak in growth, one or even all the above constituents may be tried with safety. Gardeners and others can seldom choose their soil; they are obliged to make the best of that at hand, whether good, bad, or indifferent. Though all fruit-trees resent stagnant moisture about their roots, the Apricot specially dislikes bad drainage, and for that reason extra care is desirable in preparing the sites, not only in seeing that they are well drained, but also on heavy or tenacious soil that the surplus water can pass away freely into the drains. Where there is a good natural drainage,

it would be quite useless to go to the expense of adding more, and as has been already stated, local conditions should determine what is necessary to be done. Old plaster or mortar refuse is useful for supplying lime; and, to keep the soil open and porous, wood-ashes, burnt vegetable refuse, roadside scrapings, &c., are all excellent for mixing with it and improving its quality for the roots. No doubt, the best soil for this fruit is a rich and rather sandy loam; but, even then, a great deal depends on the stock upon which the Apricot is worked; some consider the Brompton stock a good one, but as a rule the trees do not attain old age thereon. The St. Julien is much better, but it is doubtful if that is so suitable on all soils as the Mussel stock, and our experience is decidedly in favour of the last-named as producing a healthy and fruitful tree.

In purchasing trees, if any exhibit signs of gumming, they ought to be rejected at once, only planting clean and healthy-looking trees, that also possess plenty of nice fibrous roots; long straggling roots should be cut back, and any broken pieces taken clean away. Planting may be done either in the autumn or in the early spring; the former is much the better season, as trees planted at the end of October or early in November become half established almost immediately owing to the warmth remaining in the soil, and consequently a strong and vigorous start into new growth is made in the following spring. As already mentioned for Apples, deep planting should be guarded against, and the roots evenly distributed only a few inches below the surface, putting fine soil over the roots, and then the rougher soil. Make all very firm, and apply a mulch of strawy manure or litter at once. When trees are planted against walls or wooden fences, it is wise not to nail the trees to the wall for some time, as the soil settles down a little, and when the tree is secured to the wall, it cannot sink with the ground, and is therefore partially drawn out of the soil. The distance from tree to tree against walls may vary a little according to the height of the wall, but as a general rule 20ft. is a fair distance.

The pruning of Apricot-trees should be done both in summer and in autumn; in fact, they need attention from the time when growth commences, in the timely removal of buds or embryo shoots which are too numerous or badly placed. With a well-formed tree in view, the cultivator ought to study where new shoots are wanted and where they are not, selecting the best-placed buds to remain and fill the blanks on the wall, and rubbing away all those not required to make new shoots or to form spurs. Later on in the summer, or towards the middle of July, any very gross shoots will be all the better for a check by the removal of the point, and all breast-wood may be cut back to about four or five eyes or buds; further, if a few leaves that cover or hide the fruit are taken away, the latter will be

improved. About the middle or end of September Apricots may be finally pruned for the year, shortening back those shoots that throw the tree out of balance, and cutting-in all the spurs to two or three eyes or buds. It should be impressed upon amateurs and others that in young trees the lower branches should be the first consideration; unless these are secured and a good foundation is laid, a well-shaped tree is an impossibility. No anxiety need be felt about the middle filling up: the natural tendency of the tree is to do that. When once good side branches have been made, attention may be paid to filling up the centre.

The Apricot being one of the earliest kinds of fruit-trees to blossom, it is more subject to damage from frost than many others, and unless a certain amount of judgment is exercised in protecting the blossoms, a fine promise of fruit may be ruined. Nothing in the way of coddling is advisable—in fact, protection is, to some extent, injurious when the weather is mild. A piece of ordinary fish-netting, doubled in thickness and dropped down about 2ft. away from the trees on frosty nights, will prevent injury. Such material may be looped up on warm days or nights, and let down in a few minutes whenever the state of the weather renders it necessary. When the fruits have attained the size of peas, no further protection is requisite.

Thinning of the fruit should be done early and gradually if the set is a heavy one. All the worst-placed fruits—e.g., those facing the wall—are best removed when quite small; and, when the fruits are about the size of hazel-nuts, they ought to be finally thinned to 6in. apart each way, of course retaining those that are in the best position for light, and employing those removed for tarts, &c.

The following varieties succeed very well on southern or western aspects: Frogmore Early, large and very sweet; Grosse Peche, large and of fine flavour; Hemskerk and Kaisha, two medium-sized varieties, of good flavour and free bearers; Shipley, another good sort; and Gloire de Pourtales, a large and promising new variety. In the warmer parts of the country Breda may be planted as a bush-tree, as it is hardy and prolific.

Blackberries.

Many writers have lauded the American Blackberries as worthy of a place in every garden, but unless the seasons are very favourable they are seldom worth growing. Many of our British sorts are far better bearers in all seasons, and the fruit is as large and of superior flavour to the American varieties, which are not worth planting except to cover ground on which little else will succeed. By cutting out all weak and dead wood, and encouraging strong growth by an occasional mulch of manure, very fine fruit indeed is obtained. There is a White Blackberry Iceberg, whose fruits are of good flavour. Pride of the Market is a good black variety.

Cherries.

Before planting any kind of Cherry-trees, it is necessary that one should consider whether the soil is adapted to their culture, or if it can be made so by artificial means. When the soil is shallow, resting on sandstone, gravel, or chalk, the conditions are unsavourable, for though the trees may grow more or less freely for a few years, they will eventually be practically certain to commence gumming or dying back, and prove a failure. Again, if the site is low, damp, or badly drained, it is of little use to plant Cherries, and when the land is heavy and resting on cold clay many of the Sweet Cherries are unsatisfactory. To grow them successfully a well-drained soil is essential, also a fairly good elevation, and if the land slopes to the south or south-west all the better for the welfare of the trees. No doubt a deep loam, varying from a sandy to a moderately heavy character, is the best. Much can be accomplished in unsuitable soils by excavating and removing the natural earth and replacing it with good fibrous loam. When this is done, it is important that the roots should not be permitted to penetrate into uncongenial surroundings ; they should be restricted to the border prepared for them by the aid of annual mulchings of fresh compost and fertilising matter. This applies specially to trees planted in gardens against walls, or as bushes ; and with such it is advisable for the planter to order his trees early to enable him to get them in at the end of October or early in November. As already stated under Apples, this early planting enables the tree to become semi-established at once. The trees are best not nailed up to the walls for some time after planting, as this will enable them to settle properly in their sites, which is not always the case if they are secured to the walls immediately after planting. For planting against walls the fan-shaped tree is the best form, the distance between the trees varying a little according to the character of the soil—if a nice loam, 20ft. apart will be none too much space for full development of the trees ; if not a very good soil, 16ft. will be plenty, as much less growth will be made than on a more suitable soil.

For the first few years the pruning must be done in such a manner as to form a shapely, well-proportioned tree. To this end special care is necessary to develop the lower branches first, not filling up the middle or centre of the tree until the lower and side branches are secured. If this is done, a beautiful tree is made, each branch being strong and fruitful. Summer pruning is necessary for obtaining good results. At any time during the summer, when the young shoots are 1ft. or so long, they should be cut back to about four eyes. Fresh growth will be made from the end bud, and this may be pinched back to two or three eyes again, repeating the process as often as may be requisite by the new growth made. At the end of September or

early in October it is advisable to cut back the current year's wood to about the fourth eye, or where it was cut the first time in summer pruning : if cut closer, some of the finest fruit-buds will be destroyed. The young wood made at the point of the branches should not be cut back when summer pruning, unless the tree has filled up all the wall space available : then it would be necessary to cut it back, as there would not be room for further extension of the branches.

Sometimes cordon-trees are recommended as being excellent for planting against outside walls. In some few places they may answer fairly well, but our experience is that they are more adapted for culture under glass, and cannot be recommended for general outside culture. It is much preferable to plant the fan-shaped tree, putting the Morello against North walls, and the sweet or dessert varieties in other and more favourable aspects. The Morello and a few other varieties succeed admirably on the Mahaleb stock, notably May Duke, Late Duke, Empress Eugénie, Archduke, Royal Duke, Early Rivers, Emperor Francis, Governor Wood, and one or two others of that class. The above list includes early, mid-season, and late varieties. May Duke and Early Rivers are early, the latter possessing very fine flavour; Late Duke and Emperor Francis are late ; and the others are more of a mid-season character. Opinions differ as to the best stock for the Heart, Bigarreau, and Kentish Cherries, but on the great majority of soils it will be found that the Cherry stock is the best, and the nurserymen nearly always employ it. The Heart and Bigarreau Cherries are in many varieties so delicious that wall space should be given to a few varieties of proved merit, selecting a South or Western aspect if there is any choice of position. Frogmore Early Bigarreau is a very early, yellowish-red, highly-flavoured variety, ready for use at the end of June on a warm wall. Bigarreau Jaboulay is another very early sort, with reddish-black fruit of delicious flavour. Werder's Black Heart is another grand early Cherry of fine dark colour and rich flavour. Later varieties of fine quality are Bigarreau Napoleon, Bigarreau Monstreuse de Mezel, Late Black Bigarreau, Bigarreau Noir de Schmidt, Guigne de Winckler, and the new variety named Windsor. All the above are of exquisite flavour, nice colour, and free growers and bearers.

On soils favourable to Cherry culture bush-trees are very productive, and as they are easily protected from birds by nets, excellent crops may be obtained without the aid of walls. If the trees are on the Mahaleb stock it is essential to feed the roots liberally when the bushes are bearing good crops of fruit ; this not only maintains the strength of the tree, but it keeps the roots close to the surface, whereas if such is not given the roots travel some considerable distance in search of the plant-food they require, and frequently run into soil that is injurious to

the health of the trees, causing gumming or disease in the wood. When bush-trees are on the Cherry stock it frequently occurs that strong rampant wood is made; and the more this is cut back, the stronger becomes the growth, or else "gumming" sets in. In such cases it is wise to root-prune the trees, performing the work about the middle of October. A trench should be dug some 3ft. or so from the main stem, cutting through strong roots, working out the soil underneath the ball of roots and soil, and cutting through any tap-roots that may be growing straight down into the subsoil. When this is done it is advisable to fill up the cavity made with fresh soil, with which some lime-rubble or bone-meal has been mixed, making the new compost thoroughly firm, and applying a mulch of strawy manure immediately after the operation is completed. In this way a check is given to the gross habit of the tree, and a great formation of fruit-buds is the result. Once get the trees to bear a full crop of fruit and it is seldom that any further root-pruning is necessary, as the fruit will absorb, or rather check, the superabundance of sap and vigour.

As already stated, the Morello and the Duke class of Cherries succeed on the Mahaleb stock, which is adapted for both wall- and bush-trees. A few of the Heart section also answer on the Mahaleb stock, but nearly all other classes, such as the Bigarreau and Kentish kinds, do better on the Cherry stock. All the varieties recommended for wall-trees are equally suited for bush-trees; in fact, the majority of varieties in commerce are answerable, providing the instructions already given are carried out.

Under the section on Apples reference was made to the use that might be made of the trees for park or shrubbery ornamentation, and that remark is equally applicable to the Cherry where the soil is suitable. If the Wild Cherry makes a good tree in the neighbourhood it may be taken for granted that the better or cultivated varieties will also succeed. There are few flowering trees so beautiful as the Standard Cherry when in full blossom, and for beautifying gentlemen's estates it is infinitely superior to many of the deciduous trees planted for effect. The following varieties make large trees, and produce large, handsome fruit, valuable alike for home use or consumption: Kentish Bigarreau (a favourite market variety), Bigarreau Napoleon, Black Circassian or Tartarian (a grand old favourite variety), Black Eagle, and Elton (probably the best variety for heavy soils). On good soils Waterloo is an excellent variety. Of course it will be understood that all trees intended for growing as standards are worked upon the Cherry stock, as the intention is for them to develop into large trees; for that reason, if planted in clumps, they should be about 40ft. apart each way. After planting, firmly secure the trees in an upright position by staking and guarding against the ties cutting into the young wood and stem: much injury may follow neglect in this respect.

While the Cherry enjoys liberal treatment, the cultivator must be guided by the weight of crop and vigour of the tree in applying fertilising matter. It should be understood that trees can only take up and assimilate a certain amount of food, and excessive applications are very apt to cause bad health. When trees are bearing heavy crops, or are weak in growth, diluted liquid manure or a dressing of farmyard stuff is desirable, but only in moderation. The same applies to the prepared manures on the market. One of the safest manures for Cherries is bone-meal at the rate of 3oz. to the square yard, given just as the trees commence growth in spring.

Of pests, one is the Slug-worm, the larva of a species of Saw-fly (*Eriocampa limacina*). It is about $\frac{1}{4}$ in. long, and when mature of a dark brown colour (Fig. 206). Prior to that it has undergone several changes, and in the first stages of that condition it has a most disgusting look, owing to its exudation of a black

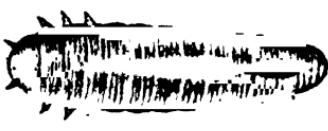


FIG. 206.—MATURE SLUG-WORM LARVA
(much magnified).



FIG. 207.—PERFECT INSECT OF
ERIOCAMPALIMACINA.
(a) Line showing actual spread of wings.

slimy secretion. The head is abnormally big, and makes the insect look repulsive. When nearly full-fed the slime disappears. The pupa-state is passed in an earthen cocoon in the soil, a little below the surface. The perfect insect (Fig. 207) has a black body and transparent wings, and is seldom recognised. The female selects the upper surface of the foliage for egg-deposition, and the young larvae when hatched soon reduce it to the condition shown in Fig. 208.



FIG. 208.—LEAF WITH EPIDERMIS EATEN BY SLUG-WORM LARVA.

Quicklime is the best remedy to apply in the early morning, repeating it after an interval of a couple of days. In very bad attacks the surface-soil may either be stirred to expose the pupæ, or removed for 4in. or 5in. and buried elsewhere at such a depth that the insects could not make their way through. Pears are also attacked by Slug-worms.

Chestnuts (Sweet).

In some few gentlemen's houses these Sweet Chestnuts are liked for dessert, or by young people, and when the trees acquire age they produce immense crops of nuts most years if on good soil, and cattle have access to the land. The droppings of the cattle enrich the soil, and the trees afford good shade, which cattle appreciate in hot weather. However, on poor soil, and also amongst other trees, the Sweet or Spanish Chestnut will thrive and fruit freely without any attention whatever. There are a number of species and varieties, the commonest sort being *Castanea sativa* (Fig. 209). Apart from the nuts the tree is remarkably handsome, and worthy of inclusion in parks and ornamental grounds.



FIG. 209.—CATKIN AND FRUIT OF SPANISH CHESTNUT.

Orange Crab, Paul's Imperial, Scarlet Siberian, Yellow Siberian, Transcendent, and the new and lovely weeping variety, Elsie Rathke. All the above are most charming when in full blossom, and the fruit is useful for making jelly or preserves. The trees seem equally at home on most soils, providing they are not waterlogged, and it must be a very poor ground indeed that will not grow these subjects more or less well.

Currants.

Few fruit-bearing trees or bushes are so accommodating as the Currant, the Black, Red, and White kinds all growing and fruiting well on almost all sorts of soils, and either in the pure air of the country or in the sulphurous atmosphere of towns.

Crabs.

Of cultivated Crabs the Dartmouth is probably the best known of all these very attractive trees. Its large handsome flowers and glowing crimson fruit have made it very popular for ornamental plantations. Though not so well known there are many other varieties equally as beautiful and fruitful, amongst which the following are all excellent: John Downie, Fairy Apple, Malakovna,

Black Currants.—Taking the Black Currant first, the ideal soil for this is one that is deep, rich, moist, and with sufficient drainage to take away all surplus moisture. Other soils, however, will produce very good crops of fine fruit by a little judicious management of the soil and situation. For instance, in a garden where the soil is naturally hot and dry, owing to its light or sandy character, the Black Currant plantation should be in the coolest part of the garden, and if somewhat shaded the better, giving a mulch of strawy manure every year early in May; this will keep the soil moist and cool during the dry summer months, and will assist in swelling the fruit to a large size. If planted on very light soils in the full blaze of the sun Black Currants are almost certain to fail. On heavier soil, which is of a much cooler nature, it is not necessary to select a low or shady position, as they will then succeed in almost any position, and may be planted wherever convenient. However, before planting the soil should be thoroughly cleansed of all noxious weeds, especially Convolvulus and Couch Grass. The first cost of doing this may be rather heavy, but it is the most economical method, for if these tiresome weeds once get established amongst the roots of the trees they can only be cleared therefrom by lifting and thoroughly cleaning both the roots and the surrounding soil. Another point of really great importance is the purchasing of plants from a nurseryman who will guarantee his stock free from that terrible pest—the Black Currant Mite. Thousands of trees are annually ruined by this creature, and proper precautions should be exercised that it is not introduced with newly-purchased trees.

As with all other fruit-trees, planting, if possible, is advisable at the end of October or early in November, the distance being 6ft. apart each way. Digging amongst the bushes is done in most gardens during the winter, but the system is not one to be recommended, as the Black Currant roots freely on the surface, and to dig amongst the bushes means cutting through the best fibrous roots. The difficulty of keeping weeds down will be comparatively easy by means of frequent hoeings in dry weather, and the loose surface soil following these repeated hoeings will conserve moisture, admit air, and prove highly beneficial to the health of the trees.

The pruning of Black Currants differs from that of the other kinds by reason of no spurs being made, but a good supply of strong, young wood annually retained, which is not cut back at all. In brief, the object is to encourage young wood from the lower part of the bush every year, and to cut out a corresponding amount of old wood without reducing the size of the bush. The pruning may be done at any time after the fruit is all picked, as it does not signify whether the trees have lost all their foliage or otherwise. All prunings ought to be burnt as

soon as possible, and the ashes returned to the soil. In this way many insect eggs, &c., are destroyed, and the ashes serve as a gentle stimulant to root-action.

The following few varieties are reliable for home use or for market requirements: Baldwin's Black (*syn.* Champion), a very profuse cropper, large, of fine colour, and very sweet. Lee's Prolific, an abundant bearer on good soil; the fruit is large, and travels well to market. Black Naples is somewhat later in ripening than the above sorts, and is a heavy and continuous bearer. Ogden's Black is a very free bearer, and excellent on all soils. The well-known Old Black, although a good variety, is neither so free in growth nor so prolific as the four sorts named above. Some contend that it is never attacked by the mite, but we have seen it quite as badly infested as any other variety.

Red Currants are always in a more or less limited demand in gardens of every kind, and fortunately they are not particular as to the soil or situation, providing no stagnant water lodges about the roots. The bush form is that most generally adopted for these Currants, and is no doubt the best, as heavy crops are obtained with very little trouble. As already

mentioned, the ground should be well dug and cleaned prior to planting in the autumn, and a few of the best varieties only selected. Raby Castle is a well-known large and prolific variety. Comet is a new sort of great promise, producing long clusters of large and very sweet berries. Cherry and Red Dutch are two varieties with large, handsome fruit borne in profusion. Chiswick Red (Fig. 210) is also a free bearer of large, sweet fruit.

White Currants. — The pruning of both Red and White Currants is exactly the same. In bush-trees it consists in having five or more branches springing from a clean leg or stem (Fig.



FIG. 210.—FRUITING BRANCH OF CHISWICK RED CURRANT.

211); these branches should be equidistant from each other, and all the branches should be cut back to about four eyes, thus forming good fruiting spurs. Where birds are troublesome in taking

the buds it is advisable not to prune until spring, otherwise every bud will disappear, and a crop will be impossible. Both the Red and the White Currant are admirably suited to growing as single, double, or treble cordons, and may be planted against north or other walls. The pruning of cordons consists in merely cutting in all side-shoots at any time during the winter. One very decided advantage of these cordon Currants on walls is that by means of nets they are easily protected from birds when the fruit is ripe, and if some plan is adopted of throwing the rain off the trees, really plump and delicious Currants may be picked up to the end of November. If the rain fell on the fruit it would rot or split, and thus fail to keep.

Cuttings of the young wood of Black Currants root readily if put in firm, sandy soil immediately the foliage has all fallen. The same remark applies also to the Red and White varieties, but the cuttings are made differently. In the case of Blacks none of the lower buds are removed, as it is always an advantage to have young wood annually starting from the base. With Reds and Whites the conditions are altered, as it would be undesirable to thus have young wood continually springing up; therefore, in making the cuttings all the lower buds are cut out. Supposing the cutting is 15in. or 18in. long, only three or four buds are allowed to remain. In this way a clean leg or stem is obtained, and if the buds have been properly cut out there will be no trouble with young shoots springing from the base. In two years the little bushes may be planted out in the position they are to permanently occupy.

Currants, and their near relative, the Gooseberry, are attacked by several voracious animal pests, of which the most prominent are the caterpillars of the Magpie Moth (*Abraxas grossularia*),

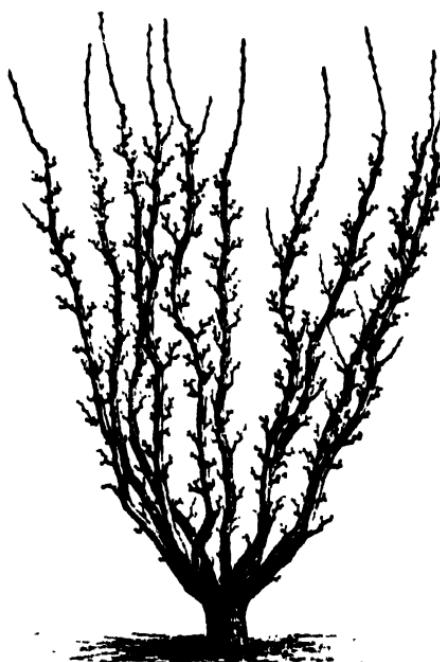


FIG. 211.—CORRECT METHOD OF PRUNING
RED OR WHITE CURRANTS.

Fig. 212) and of the Gooseberry and Currant Sawfly (*Nematus Ribesii*, Fig. 213). Both these occur in spring, and the first-

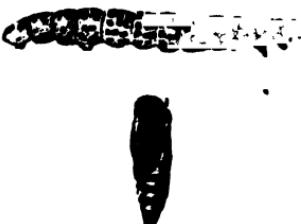


FIG. 212.—PERFECT INSECT, CATERPILLAR, AND CHRYSALIS OF GOOSEBERRY MOTH.

named also appears in autumn.



FIG. 213.—LARVA OF GOOSEBERRY AND CurrANT SAWFLY.

Insecticides are of little use in either case, and certainly not in the first. The *Lampronia* species also attacks the fruits for the sake of the seeds contained. Removal of all such shoots, and of prematurely-coloured fruits on trees known to be infested, would be beneficial.

The greatest pest of all is the Currant-Bud Mite (*Phytophagus ribis*), which has hitherto baffled all the most experienced entomologists to cope with its attacks. Black Currants only are infested, and the terminal

Then come the caterpillars of the yellowish moth, *Cidaria associata*; and of the ash-grey V-marked *Halia vuaria* (Fig. 214). Spraying with Paris Green when the fruits are small is the remedy to apply. Hellebore dusted on in the morning is effective. Both are virulent poisons. It is not advisable to use them when the fruit is of a size for market or the kitchen. The insects are all leaf-feeders.

Far more difficult to deal with, however, are two moths whose larvae affect the shoots, causing them to droop and die. These are the Currant Clear-wing Moth (*Sesia tipuliformis*) and the Currant Shoot Moth (*Lampronia capitella*).



FIG. 214.—V-MOTH.

buds are usually oftenest selected. Once the creatures are inside they cause (by the irritation set up) the buds to swell abnormally (Fig. 215), and such buds may easily be detected in late autumn. Here again insecticides are of very little avail, and hand-picking the galled buds is the most practical remedy. Still, if the trees could be sprayed during July with kerosene emulsion some good might be done.

The Hazel Nut is attacked by a relative of the Currant-Bud Mite, known as *P. Arellanae*, and the galled buds may be readily seen in winter. These two animals have spread over a very wide area, the former more particularly.

Scales and Aphides affect the Currants. Hot water (140deg.) or a solution of Kerosene Emulsion is the best insecticide to use against these.

Damsons. See "Plums."

Figs.

It has always seemed strange that the Fig has not been more largely grown against warm walls in this country, as it is quite as hardy as the Peach and Nectarine, no more costly to grow, and affords a pleasing change on the table. Possibly, one of the causes of neglect has been that in many gardens the trees have proved barren, and little or no attention has consequently been paid to pruning and otherwise keeping them in order. To make Fig culture outside really successful, it is essential that good drainage be given, as water lodging about the roots is fatal to success. Next in importance to good drainage comes a rather poor soil. If the trees are planted in rich soil, rampant growth, with immense foliage, is made, which seldom matures, and fruit is conspicuous by its absence. Lime or plaster refuse mixed thoroughly with the soil before planting serves a very useful purpose, by not only keeping the soil open and porous, but also supplying an element necessary for the fruit.

Having prepared the soil, there arises the question as to the best time to plant. Some strongly advocate autumn planting, but, if a severe winter follows, the frost is very liable to seriously injure or cripple the tree; whereas, if planted towards the end of March, it has all the summer months to grow and take firm



FIG. 215.—SHOOT OF CURRANT INFESTED BY PHYTOPTUS RIBIS.

possession of the soil, and is thus infinitely better able to withstand frosts. In planting, the soil can scarcely be made too firm, and, for that reason, the operation should only be performed when the soil is fairly dry and does not stick to the tools. If the soil were wet, it would set in one solid mass later on, and would prove impenetrable to either roots or moisture. Immediately after planting, a thorough soaking of water should be given to settle the soil about the roots, and a mulch of litter spread over the surface to retain the moisture. During the summer months it may be necessary to water the tree again several times, and after very hot days a good syringing overhead will be very beneficial, as the Fig thoroughly enjoys heat and moisture. Neither liquid nor solid manure should be given until the trees are cropping; then one or both forms of manure will be of assistance, or, if the smell is objectionable, one or other of the odourless prepared manures may be given with advantage. 1oz. to each square surface yard will be sufficient to allow at once, as it is better to be on the "weak" side in applying manures.

In training and pruning the Fig, due allowance should be made for the large foliage, and, for that reason, 6in. is none too much space to allow between the growing young wood. When each shoot has made seven or eight leaves, the point should be pinched out: this induces the formation of fruit. In fact, trees that have been noted as cumberers of the ground and wall space have been turned into most productive and valuable specimens by a judicious system of pinching during the growing season. Not only is this mode advisable from a fruit-production point of view, but it is also much better for the health of the tree, as it practically does away with the knife in order to keep the tree in bounds. No fruit-tree is so impatient of the knife as the Fig; it shows its resentment of the same by a kind of canker setting in, which sometimes eats nearly through the branches, and often causes the death of young wood. When the growth has been so regulated that each shoot has sufficient space for proper development, the wood becomes well ripened, and protection in winter is neither requisite nor desirable. Our experience is that it is only those trees which have had their growth too congested that suffer from hard frosts.

The well-known Brown Turkey is a favourite variety, because of its hardy and fruitful character; some lovers of Figs object to its flavour, but most people consider it good. White Marseilles is a splendid variety on warm walls, and is superior in quality to the first-named, and a greater bearer. Brunswick is a very large variety, of fair quality, hardy, and a good bearer in warm positions. The Black, White, and Yellow Ischia are all three of most delicious flavour, also good and constant growers and croppers. The comparatively new variety, St. John's, is proving a good early kind, a free bearer, and hardy. It is of medium

size, white, and delicious as to flavour. When the trees are bearing large crops they should be assisted by manure. Until, however, this takes place little if any will be required. Otherwise a too vigorous rather than a fruitful habit will be induced.

Figs may be easily propagated by suckers, layers, or cuttings; they quickly take root if placed in gentle bottom-heat just before the trees start into new growth. Cuttings should consist of young wood some 8in. in length.

Gooseberries.

In the fruit garden the value of the Gooseberry is so well known that it needs no introduction even to the greatest novice. When Apples are over, and Rhubarb has begun to be monotonous, green Gooseberries enable the gardener to make a welcome change for tarts, &c.; and for the market-grower they are equally valuable. Another advantage is that half the crop may be gathered for use while green, and the remainder will still prove a good crop, and the fruit be all the finer on account of the previous gatherings. Many market-growers adopt the plan of picking all the largest berries immediately they are big enough for sale; a little later, the berries on the lower branches, or where at all thick, are picked; and the last, or final, gathering is made when the fruit is ripe. The last picking is usually remarkable for the fine berries, and these are in good demand. Some persons might be tempted to state that the large berries are inferior in flavour to smaller berries of the same variety but there is really no comparison, as the large berries are far superior to the small ones in quality.

Probably no fruit under cultivation responds so freely to good treatment as the Gooseberry, and, because of its accommodating nature, less attention is paid to it than its great merits deserve. On all soils where the drainage is good, the position open, and the soil fairly deep, really magnificent crops of fruit may be readily produced, as the Gooseberry is not at all particular as to soil. Before planting, the ground should not only be deeply dug, but all weeds that may prove a nuisance later on ought to be eradicated, thus saving labour and annoyance as the bushes become larger. Deep-planting is injurious; the nearer the roots are (in reason) to the surface, the better will be the progress of the tree or bush.

When to plant is a question that must be decided by local influences; no doubt exists as to November being the best time. Gardeners, however, are often obliged to plant when circumstances will permit; but under no conditions ought planting to be done when the land is wet and the soil sticky. It will be far preferable to lay the plants in by the roots in a shallow trench, and plant out when the soil is in a good working

state, irrespective of season, at any time between the beginning of November and the end of March. If the soil is not poor, manure is unnecessary; in fact, the little bushes are better without it until they commence fruiting. As a rule, the bushes may be planted from 5ft. to 6ft. apart each way in large or small blocks. Another mode of planting is by the side of paths round the kitchen-garden; in such cases 6ft. to 8ft. ought to be allowed the line or row, thus enabling free access to the quarters occupied by the vegetables.

Another excellent method of growing Gooseberries is as cordon trees trained to supports by the sides of walks; or they may be trained against north walls to afford late supplies of fruit. Single, double, or other cordons may spring from one stem, each cordon being 1ft. from another. Good crops of fine fruit are borne on these closely-pruned cordons; they are easily protected from birds, and occupy very little space; and for small gardens, or where space is very limited, they are extremely useful, and worthy of greater attention.

The pruning of the Gooseberry in whatever form the tree is grown is a very simple operation, but frequently it is not correctly done. Supposing a tree is bought from the nurseryman, it should have a clean stem, or leg, 1ft. high at least; from this stem the branches should spread in all directions, and the person pruning ought to aim at having a bush equally proportioned, with branches and young wood so arranged that light and air can pass all through, with sufficient room between the growth for the hand to pass in to gather the fruit. The leading shoots should be left nearly their full length, and all other side-shoots cut in to about three eyes. If the tree has a "weeping" habit, it is essential that all shoots left to form a tree be cut back to a top, or upright, bud; if cut to a bud on the lower side of the shoot, they will soon be growing downwards instead of upwards. Of course, in those varieties which naturally have an upright habit, it does not matter much about cutting to any bud in particular. Birds are often fond of devouring the buds, and where they are troublesome it is advisable to leave the pruning until the spring, just as the buds are moving. Cordon trees are pruned in the same way as other fruit-trees grown on that system: the leading shoot is allowed to grow nearly 1ft. or more annually, and all side-shoots are cut back to about three buds in the autumn or winter. If exhibition fruit is required, there must first be strong healthy, young trees, and all useless shoots judiciously removed while small. In the gardener's words, the trees must be "dissubbed," retaining only just those shoots necessary for the further development of the tree and to form the requisite spurs. Over-crowding or congestion must be avoided, and the fruit carefully thinned, leaving only the berries in the positions where they will get the full benefit of light and air.

Heavy or rather strong applications of manure are unnecessary—indeed, harmful. If diluted liquid manure is applied once or twice weekly the effect will be far better than in the case of concentrated and less frequent applications. Failing liquid manure, guano, at the rate of 1oz. per square yard, and 1oz. of nitrate of soda, similarly applied every fortnight while the fruit is swelling, will cause it to attain a large size. Almost any of the manures in a prepared state may be applied with advantage, and at the strength recommended by the manufacturers, but in every case care must be exercised that none of it falls on the foliage, or damage will be done, and the tree weakened and disfigured.

A large number of varieties are equally good for exhibition or for cooking and dessert purposes; the following sorts combining all three qualifications:—*Red*: Dan's Mistake, Crown Bob, Monarch, Lord Derby, Speedwell, and Clayton. *White*: Antagonist, King of Trumps, Careless, Lady Leicester, Postman, and Alma. *Yellow*: Leader, Leveller, Ringer, Trumpeter, Criterion, and Drill. *Green*: Plunder, Telegraph, Gunner, Matchless, British Queen, and Stockwell.

Some owners of gardens have a decided objection to large Gooseberries, preferring the smaller fruiting varieties for both dessert and cooking.

To meet such demands the following are excellent: White-smith, an old favourite of high quality; Snowdrop, a pretty and delicious fruit; Early Sulphur (Fig. 216), a fine-flavoured variety, and the earliest to ripen; Yellow Champagne, one of the finest-flavoured sorts; Greengage, an early and delicious variety; Green Gascoigne, also excellent; Whinham's Industry, a favourite market variety, and very good indeed for dessert or cooking; Warrington, a sterling old variety, of proved excellence. Both the Red and White Champagne varieties should be included, as they are second to none for flavour; in fact, all the above are thoroughly reliable alike as to their cropping qualities and general excellence.



FIG. 216.—GOOSEBERRY EARLY SULPHUR.

Gooseberries are easily increased by cuttings or layers, the former being much the more expeditious method, as a large number of cuttings may be propagated from one bush. Cuttings may be made from pieces of young wood immediately after the foliage has fallen, and each cutting should be from 1ft. to 1½ ft. in length. Some people leave an inch or so of the previous year's wood at the base of the cutting, but experience has proved that they root equally well with or without a heel of older wood. Having cut the shoot or cutting to the proper length, all the lower buds, or eyes, should be carefully cut out, leaving only three or four eyes at the apex. This will later on furnish a tree, or bush, with a clean leg, and also prevent young shoots from springing up through the soil. As already stated in connection with Red and White Currants, these shoots from the base or soil are undesirable, for if such growth were permitted, all the fruit produced thereon would be covered with soil and filth after a heavy storm; and for that reason alone it is best to effectually stop the formation of these lower growths by cutting away all the lower buds when making the cutting. When the cuttings have been prepared, they should be inserted in soil and treated as already advised for Currants.

Apart from the Gooseberry Moth, Gooseberry and Currant Sawfly, and *Cidaria associata* that attack both Currants and Gooseberries, the latter has as a visitor one of the "infinitely small." This is the Gooseberry Mite (*Bryobia pretiosa*), commonly mistaken for Red Spider. It appears in vast numbers on leaves and stems in the spring, and causes them to assume an unhealthy appearance, and frequently to fall prematurely. The mites multiply very rapidly, hot, dry seasons being favourable to their increase. Kerosene emulsion should be employed, taking care that foliage and bark (more especially in old trees) are thoroughly reached. Carbolic soft soap in solution (1oz. to a gallon of water) will prove effectual if persisted in, using it hot, say 120deg. to 140deg., and on a bright day, but before the sun gets too powerful to burn the foliage.

A species of Mildew (*Microsphaera grossulariae*) asserts itself upon the foliage and does some damage. This may be stayed by dusting powdered sulphur over the leaves or else by spraying with potassium sulphide.

Grapes.

Excellent crops of really delicious Grapes may be grown outside if the vines are planted against south walls that are sheltered from cold, cutting winds, and if a little care is taken in regulating the growth during the summer. Only a few varieties, however, are worth planting, and the following have proved the most reliable: Moore's Early, a small but delicious black sort, setting its fruit freely, and one of the first to ripen, is strongly

recommended. Miller's Burgundy is a purple variety, of good flavour, and very suitable for outside culture. Black Cluster is a sweet, black variety, and sets very freely. Chasselas Vibert also answers in very warm situations, and is of extra good flavour.

The best time to plant vines outside is early in April, just as new growth is commencing, preparing the site first by mixing some good fibrous loam and wood-ashes or lime refuse with the ordinary soil. In this the vine should be planted without disturbing the roots at all. It should not be planted deeply; if the ball of roots is only an inch or so below the surface that will suffice. The soil should be made firm round the roots, and a good soaking of water applied immediately after planting, afterwards putting a mulch of litter over the soil to retain moisture. Every effort should be made to encourage growth by watering thoroughly if the weather is dry, and after bright, sunny days a sprinkling overhead with the syringe will do good.

No liquid manure must be given for a year or two, as it would do more harm than good; in fact, if the vines are planted in moderately rich soil, no manure of any kind is necessary until they commence to fruit, when it may be applied with good results. As many shoots as may be requisite to cover the space at command may be trained on the wall, allowing 3ft. between each permanent shoot; in later years each of these shoots or main branches will emit side-shoots, or laterals, and these should be about 15in. apart on each side of the main branches, or "rods," as they are termed by gardeners. The laterals should be



FIG. 217.—LOGAN BERRY.

trained in the 3ft. space between the rods, and when they have made about 18in. of growth, the point should be cut out; or, if bunches are on the laterals, the point should be taken out one leaf beyond the bunch. Over-cropping must be avoided, and when the foliage has all dropped, the laterals should be cut back to two eyes, these forming spurs. Should

more than one lateral start from a spur, all but the strongest ought to be rubbed off while small.

Logan Berry.

A fruit of American origin, produced by crossing the Blackberry and the Raspberry. It combines the flavour and the appearance of both parents in its fruit (see Fig. 217), and is alike useful for small and large gardens. It is hardy, fruitful, and not too rampant, thriving best in a fairly good soil. It should be planted in February, and should not be disturbed very much.

Medlar.

These highly-ornamental trees are a great success upon both the Pear and the Whitethorn stocks, flowering freely and bearing huge crops of fruit on fairly good soil that is well drained. The Dutch (Monstrous) is the largest-fruited variety; the tree has a spreading habit as compared with the more compact-growing Nottingham, which is considered by connoisseurs to be the richest-flavoured variety; its fruit is small, and produced abundantly. The Royal has a distinct and somewhat sharp flavour; the fruit is of moderate size (Fig. 218), and the tree is a good bearer. Medlars should not be gathered until they separate readily from the tree; they should then be spread out thinly in a cool, airy room, and eaten as they become decayed.

FIG. 218.—FRUITING BRANCH OF ROYAL MEDLAR.



Mulberries.

All varieties of the Mulberry enjoy a warm position and good soil. With these aids they are very fine, and by some people the fruit is much esteemed. The large Black, White, and the Weeping Russian White Mulberry are all excellent.

Nectarines.

Within the last few years a very marked advance has been made in these delicious fruits. New varieties have been introduced by Messrs. Rivers and Sons, Sawbridgeworth, and also one by Messrs. J. Veitch and Sons, Chelsea, which enable the cultivator to pick ripe fruit outside on open walls at the end of June or early in July, thus prolonging the season for several weeks. The chief points essential to success are a warm situation, good drainage, suitable soil, a correct method of pruning and training the trees, and perfect cleanliness. In some parts of the North really excellent crops of Nectarines are grown; but unless the situation is very favourable indeed, the planting of trees outside cannot be recommended very far north of the Trent. Further South there should be little difficulty in growing both trees and fruit to perfection, providing the points already enumerated receive requisite attention. Walls facing the south or south-west, and sheltered from cutting draughts of wind, are the most suitable aspects for Nectarines (these remarks also apply to Peaches), and such sites are available in almost every garden of any extent.

Having decided on which wall the trees are to be trained, the first operation should be to see that the drainage is in good order. If the soil is resting on gravel, no artificial drainage will be necessary, as all surplus water will quickly disappear. But if on rock of any kind, it may prove too wet for the good health of the trees, and it will be better to make quite sure by putting in a drain a few feet from the wall. Again, where the sub-soil is of a clayey nature, it is wise to drain; in fact, the importance of good drainage for fruit-trees can scarcely be overestimated, especially when of a tender disposition, like the one under notice. Soil properly drained is much warmer in winter and cooler in summer than undrained ground, and therefore the former is a more suitable rooting medium. Soil varies so much in different gardens, that the local conditions must rule what should be done to make it in a proper state for the future welfare of the trees. If very light, the addition of marl or heavy loam is desirable, as Nectarines enjoy a moderately heavy soil. On the other hand, if it is tenacious or heavy, the addition of burnt garden refuse, road-scrapings, or parings is beneficial. In each case the new soil should, if possible, be of a fibrous character. Deep borders should be avoided. If only about 2ft. deep they will be all the better for the trees, and every effort should be made to retain the roots in the 2ft. border; when they descend in quantity to a lower depth they are beyond solar influences, and often get into something more or less injurious, causing gumming or unripened wood. In thousands of instances no great care has been taken to prepare any border whatever, but there has been naturally a good situation, or if not the trees have succeeded very well for a few years and

then gone into a state of collapse ; therefore, unless it is assured that no improvement is necessary, it will prove more satisfactory to do the work well in the first instance.

When the trees arrive for planting, all wounded or jagged roots should be cut back. When planting, the roots ought to be spread out evenly and within a few inches of the surface, deep planting being always avoided. No manure should be incorporated with the soil ; but if this is heavy, a little lime-rubble or plaster refuse may with advantage be mixed with it when planting, making all thoroughly firm about the roots. Loose soil frequently induces a sappy growth, which does not mature, and is followed by losses of wood from frost, while fruit is afterwards conspicuous by its absence. On the other hand, a firm root-run means solid wood, well matured, and bristling with fruit-buds that usually set in abundance. After planting, a mulch of strawy manure will conserve moisture and assist the formation of new roots. The best time to plant is the end of October, but in many cases this is impossible, owing to conditions over which the grower has no control. If the trees cannot be planted in the autumn, it is better to defer the operation until February : mid-winter planting is seldom advisable unless the weather is open and the soil in a good, free-working condition.

A great mistake is often made in feeding the trees too early with natural or chemical manures, provoking a rampant growth and rendering root-pruning necessary to bring them into a fruitful condition. No manure of any kind is necessary until they have commenced to fruit, and even then weak applications are best, strong doses doing more harm than good.

The training of the Nectarine-tree, in its young stage particularly, requires a certain amount of care, as unless a good foundation is laid in the first instance, a poor and ill-shaped tree is the result. The first and most important point is to form the lower part of the tree by training the lower limbs, or branches, and leaving the middle open ; the centre of the tree will always fill up later. If undue vigour is shown by any of the branches while growing, such should have their points removed once or twice during the summer ; this will act as a check on their vigour, and also assist to keep the tree in balance, *i.e.*, to retain each side of it of similar size. In the spring many more shoots will appear than it is possible or advisable to allow to remain, rendering it necessary to disbud the trees. This system of disbudding should be done gradually ; if the buds were removed all at once a check would be given to the tree. All the worst-placed buds should be rubbed off first, especially those that face outwards, for if left these would make fore-right shoots that would eventually have to be cut out. Gradually the other buds or shoots should be removed, leaving only those necessary to fill up blank spaces on the wall, or to increase the size of the

tree. Another point is to take care that buds are left in the middle of the tree to cover bare wood ; in fact, they should be arranged that young wood is evenly distributed over the whole of the tree without overcrowding in any part—about 6in. between the young shoots will be ample space. A little judgment and experience will soon enable anyone to understand disbudding. For the benefit of novices, however, it may be

stated that this operation is usually performed immediately after the fruit is set, and when the young shoots are from $\frac{1}{2}$ in. to $\frac{1}{4}$ in. in length. As the young shoots elongate they must be carefully fastened in proper positions to prevent breakage.

Thinning of the fruit ought to receive early attention, first taking off all the worst-placed fruit when about the size of peas, and leaving the most prominent ones that are in a position to swell up to a large size without hindrance, to get all the sun and light possible. No further thinning of the fruit is desirable until after the "stoning" period ; then, if the tree is not very vigorous, a few more fruits may be removed. The

FIG. 219.—FRUIT OF NECTARINE.

stoning season is sometimes an anxious one, for if the trees are not in good health they are apt to cast a proportion of their crop ; while if in vigorous condition little, if any, of the fruit (Fig. 219) will fall.

The pruning of Nectarines is, in our opinion, best done in the autumn, soon after the fruit is gathered, and when all further growth is stopped for the season, cutting away all very weak or exhausted wood, and bearing in mind the importance of retaining and encouraging young wood near the centre of the tree. By cutting back a long shoot or branch to a young piece springing from its base, it is a comparatively easy matter to keep plenty of young wood all over the tree ; but if once the centre of the tree become bare of young growth it will be a most difficult task to get it filled again. Some growers cut back their trees



severely during the winter pruning, and no doubt they could defend their policy; but in these days cultivation is carried on at express speed, and it is remarkable how quickly a tree may be developed into a large and fruitful object by adopting what is termed the "extension" system. In this method very little cutting back is practised—only what is absolutely necessary to keep the tree in form—the aim of the grower being to cover as much wall space in as little time as possible with good, solid, well-ripened wood. In this way big trees that will produce a large crop of fine fruit are obtained in a few years.

In our fickle climate some kind of protection is necessary when the Nectarines are in blossom, especially if the flowers are at all damp, for they are then much sooner injured by frost than when perfectly dry. Ordinary fish-netting, doubled or trebled in thickness, and hung from the top of the wall, and 1ft. or 2ft. from the trees, affords great protection; scrim canvas, calico, Frigi Domo, and tiffany are also excellent. The glass copings, that project about 2ft., are very serviceable, but whatever is employed no coddling should be permitted, and no covering be used unless really required to protect from frost. Much harm is done by mistaken zeal in covering the trees in all weathers while in blossom. In fact the object of the grower is defeated, as the air and light requisite to secure the distribution of the pollen and a good set of fruit are prevented by the shade made by the protecting material.

In warm localities and against a south wall the new Early Rivers is one of the earliest and best of Nectarines to plant; it possesses a good constitution in addition to being a free bearer of fruits of excellent flavour. A still later new early variety is Cardinal, a splendid sort for culture under glass, but uncertain outside; it is likely to prove valuable for early forcing. Lord Napier is well known as a sterling variety for outside culture, being early, large, handsome, of fairly good flavour, and an abundant bearer. Goldoni is another early sort, of great excellence in every respect, and follows the two last-named in order of ripening. Dryden is a mid-season variety, very handsome, of delicious flavour, a free bearer, and with a strong, vigorous habit; it can be highly recommended. Elrige is such a well-known and excellent variety, that scarcely any praise of it is needed; like the last-named, it is a mid-season sort. Humboldt is a very fine successor to Elrige; it is a hardy and prolific variety, of fine colour and flavour. Pineapple is probably the richest-flavoured variety in cultivation; when planted in good soil and in a warm, sunny position, the fruit is large and of a beautiful colour, and the tree is a great cropper. Spencer and Victoria are two very late sorts: the former is a reliable variety on most soils, and of good quality; the latter is first-rate in every respect on some soils, and a complete failure on others, and for that

reason it will be advisable to plant it cautiously. The foregoing are in their order of ripening. There are a number of other varieties enumerated in the catalogues of fruit specialists like Bunyard, Rivers, and Veitch and Sons; but those named include all of proved merit.

Here it may be remarked that Nectarines should not be surfeited with either liquid or solid manure, natural or chemical. What they most enjoy are rather weak applications, frequently repeated; the roots can then take up the plant-food supplied with advantage to the trees and crop, and there is no waste of fertilising matter. Potash, bone-meal, and superphosphate are all beneficial, and are a welcome change from farmyard manures.

Nuts.

Though not generally known, the Cob and the Filbert are of the easiest possible culture, and will grow and fruit freely on heavy or light, deep or shallow soil, with very little attention. They are free in growth, and bear moderately good crops of Nuts when planted in shrubberies, or on the margins of plantations or woods of forest trees; in fact, it would be difficult to state on what soils and situations they would refuse to grow, provided that they had fair drainage. Unsightly banks could be planted with Nuts very profitably in many parts of the country where squirrels are not numerous. Rats and mice are troublesome; it is astonishing how many of the Nuts these animals will not only spoil but carry to their nests: hence, if planting land with Cobs or Filberts with a view to remuneration on the outlay, steps should be taken to keep down the numbers of such animal depredators. It must not be imagined that poor soil is most suited to Nut culture; for though they will pay almost better than any other crop on poor land, yet they thoroughly appreciate rich soil and generous treatment, as is proved by the great crops of fine Nuts borne under those conditions. However, in many large and small gardens space is so valuable that it is most economical to plant the Nuts in one corner or in some other out-of-the-way place where no other trees would be useful; and there can be no question that this plan has much to recommend it.

Frequently the query is put, What is the difference between a Filbert and a Cob Nut? The answer is that a Filbert is quite covered by the outer husk, while the Cob Nut is not entirely covered, the husk, as a rule, only reaching about three-fourths of the way over the Nut. Opinions differ very much as to which—the Cob or the Filbert—is the better to grow for crop and flavour. Probably the well-known Kentish Cob is the heaviest bearer, and it succeeds admirably either as a bush or standard tree, consequently it is a favourite market variety. Cosford is another excellent free-bearing Cob; so also

is Merveille de Bollwyller, the latter having very thick shells, and being one of the best for keeping. In Filberts Lamberts is a very good variety, producing its large clusters in great abundance. Prolific, or Frizzled Filbert, is another remarkably free sort, the flavour being very good; it is always liked on the dessert-table. The Purple Filbert is a very attractive sort; its large, deep purple foliage and fruit make it one of the most ornamental denizens of the shrubbery, and the fruit is of good quality, though not so freely produced as on some other varieties.

The distance apart to plant Nut-trees will depend a great deal on the soil. If this is thin and of poor quality 10ft. apart each way will be ample, but if it is rich and fairly deep 14ft. apart will be a very suitable distance. In all cases it is advisable to break up the ground well, to thoroughly cleanse it of weeds, and to have the ground ready for planting in October. Of course, circumstances may prevent such early planting, and in such cases the operation may be undertaken at any period between the end of October and the end of February, selecting a time when the soil is in good working condition and does not adhere to the tools. It is best to purchase trees on a leg, or stem, thus avoiding innumerable suckers from the base, and this also permits of hoeing, &c., under the trees. Immediately after planting a mulch of strawy manure should be placed over the roots; nothing in the form of strong manure should be applied until the trees are well established and producing good crops of Nuts, when it is most efficacious if given as a mulch, and not dug in amongst the best fibrous roots, as is only too frequently done.

The formation of the tree requires a little judgment. In order to get the head well proportioned, about ten or twelve main branches should be encouraged to radiate from the leg, or stem, at as nearly even distances as possible from each other. If one or more branches outgrow the others, and are likely to throw the head on one side—to make it, as gardeners say, "lop-sided"—the offending shoots should have their points cut away: this will check them, and add to the strength of the weaker branches. When the main branches are fairly well developed, a twiggy growth ought to be encouraged from them, not overcrowding the small wood, as it is on this that most of the crop is produced. The middle of the tree should be kept open, so that plenty of light and air can penetrate to all parts. Most fruit-bearing trees are pruned during the late autumn and winter, but this is never advisable with Nuts. The object of late pruning is that there may be an abundance of male catkins to produce pollen to fertilise the female flowers. If the trees were pruned during the winter, very possibly there would be a scarcity of male flowers, and the trees would be barren through a lack of

pollen. The flowers are quite separate and distinct; the male flower is produced earlier than the female, which is quite small, red, and in the form of a small tuft, rising from a semi-globular growth on the twiggy shoots. No doubt the proper and best time to prune is towards the end of March. It consists in keeping the head not only within the necessary bounds, but also free and open, removing growth where congested, and shortening back the young wood if unduly long. Any useless or exhausted wood should be cut away, and all suckers promptly removed, unless required to increase the number of trees. Opinions vary as to which make the best trees—those raised from suckers or those from layers. Our experience is that suckers make the largest trees in the shortest period, but that layers make by far the most fruitful trees. Large shoots or branches may, if desired, be layered, simply notching the shoots on the under-side or making a cut half-way through the wood, and then pegging the same 2in. or 3in. deep into the soil. In a year or so the layers will be well rooted, and may be planted out in permanent positions, or in nursery quarters until wanted for other purposes.

One of the best modes of keeping nuts fresh and plump is that advised in "Fruit Culture for Amateurs,"* as follows: "It is requisite to allow the Nuts to become thoroughly ripe and brown. Then gather them, and lay thinly on dry shelves with plenty of air playing on them. In a week or ten days the

husks will be quite dead and dry, and the Nuts will then be fit to place in jars with a little salt mingled with them, fastened down airtight, and stood in a cool, dry place. They will keep fresh and good for months."

Nut-trees have comparatively few pests. The commonest is the Nut Weevil, whose well-nourished grub must



FIG. 220.—NUT WEEVIL AND GRUB.

be familiar to everyone who partakes of Nuts. Scientifically it is known as *Balaninus nucum* (Fig. 220). The female Beetle bores a hole into the young fruits and deposits therein a single egg, which eventually hatches out into the grub referred to above.

* "Fruit Culture for Amateurs" (L. Upcott Gill). By S. T. Wright. With Chapters on Insect and other Fruit Pests by W. D. Drury. Second Edition. Illustrated. In cloth gilt, price 3s. td.

This feeds upon the kernel, the Nut usually falls, and the maggot escapes and pupates in the soil. Tar should be spread upon boards or stiff paper and placed beneath the trees towards the end of May. The trees should then be shaken, and the fallen Beetles destroyed. All unsound Nuts should be burned, and a dressing of quicklime placed beneath the tree as the Beetles were about to emerge from the soil would be useful.

Phytopus Avellanae, a relative of the Currant Bud Mite, gives trouble, and the only plan is to hand-pick the abnormal buds and burn them. There is also a bluish-green and yellow Sawfly caterpillar (*Crasus septentrionalis*), which soon desolitates a tree if left alone. It is fairly abundant in early summer, and pupates in the soil. This should be sprayed with a solution of Paris Green.

Peaches.

As the culture and treatment of the Peach is exactly similar to that advised for Nectarines, on pages 355 to 359, it is here only necessary to give a description of the best varieties, placed in their order of ripening. Waterloo is probably the best early Peach we have, being hardy, setting its fruit well, large, handsome, of good flavour; it ripens outside against a warm wall in the third week in July. Amsden June and Early Alexander are only a few days behind the first-named, and also succeed very well outside. There are several other very early varieties, but they will not compare at all favourably with the three above-mentioned. As a successor, Hales' Early is a very large, handsome, and delicious fruit, and an abundant bearer. Condor closely follows in ripening its large handsome fruit, which is of exquisite flavour. Rivers' Early York is another grand variety in use about the same time as Condor; both are free bearers. Dagmar is usually a few days later, and is a large fruit with a brilliant colour, and of first rate quality; the trees always bear well. Crimson Galande is another highly-coloured variety of the finest flavour, large, and a free bearer. Violette Hâtive is in use about the same season as the last-named, and is a most reliable variety, bearing heavy crops of large, well-flavoured handsome fruit. Royal George is a well known and popular Peach; unfortunately, on heavy soils it is subject to Mildew, consequently, it should only be planted in warm soils that are well drained, when it proves one of the best varieties in commerce. Barrington is a really magnificent sort when true, and is hardy and prolific, with large fruit of the first size and quality. Bellegarde is a magnificent late Peach, of high colour and exquisite flavour; a great cropper, and quite hardy. Late Devonian is a new variety that promises to be a decided acquisition, being large, handsome, and of delicious flavour. The Nectarine Peach and Walburton Admirable are two very good late varieties of proved merit, and rich flavour.

There are several other late Peaches, Sea Eagle, for instance, that grow well and produce excellent crops of fruit; but the quality can scarcely be termed good.

Peach Curl is a very common disease due to the fungus *Exoascus deformans*. As the specific name implies, it deforms the parts affected. The leaves are curled, blackened, and frequently distorted, but the branches also participate, and the trees generally are much injured. Apart from the characteristics above noted, the leaves affected assume a yellowish or red colour, and fall. The disease manifests itself in spring, and both infested leaves and shoots should be removed and burnt. Spraying with a weak solution of Bordeaux Mixture should be used to prevent the spores which are disseminated, from germinating, and thus increasing the area of infection.

Pears.

For market purposes the Pear is one of the most uncertain fruits that are grown in this country; but for private consumption it is essential that some trees should be planted, the actual number of course depending on the size of the garden and the requirements of the family. The old idea that Pears are such a long time in arriving at a bearing state is now quite exploded. Really good Pears are produced the second year after planting; indeed, many trees will bear the first year, but it is never advisable to permit this, as it weakens them before becoming well established, and so induces a stunted habit that will cling to the trees for years.

As already mentioned in another part, gardens are so different in their soil, &c., that no hard and fast rule can be laid down as correct for all alike; local conditions must determine not only the best form of trees and the most suitable stocks, but also to some extent even the varieties, otherwise mistakes may be made that would have a very evil influence on future results. The question of stocks for Pears is a very serious one, and careful consideration as to the one likely to prove most serviceable on the soil in hand, and the form of tree best adapted to the position, is essential. On a light, shallow, or very hot soil, the Quince is nearly always a failure, for even though it frequently succeeds admirably for a few years, it is practically certain to fail eventually and drag on a miserable existence; one or two dry, hot seasons will so cripple the trees, in spite of watering or mulching, that they will be of little value afterwards. If we could always depend on moist summers the Quince stock might be employed; but as we have no control of climatic or atmospheric conditions it will be best to purchase trees worked upon the Pear stock for the hot soils named, as the roots of this stock extend further and penetrate more deeply than the Quince roots, consequently they do not suffer from drought to the same extent. On deep, rich

soils the Quince stock is much the best for *all* dwarf or restricted trees, as the roots only extend to a limited area ; therefore the growth is moderate and fruitful. If the trees were on the Pear stock in rich soil there would always be trouble in preventing strong, rampant wood and foliage, with little or no fruit. Standards should, however, always be on the Pear stock to obtain large trees.

The advice already given in the section on Apples as to drainage, time of planting, pruning, &c., is also equally applicable to Pears, and for that reason only descriptions of the varieties that answer the best on the different forms of trees are here necessary.

Cordon-Trees.—When it becomes more generally known how admirably Pears succeed as cordon-trees against walls they will be planted on a much larger scale than at present. Not only do the trees produce abundant crops, but the fruit is also large, of fine colour and quality, and therefore valuable for home use or for exhibition. In fact, some of the most noted Pear exhibitors obtain their prize fruit from cordon-trees. The following varieties crop freely if planted 18in. apart and are properly attended to afterwards, as advised for Cordon-Apples : Alexandre Lambré, a medium-sized Pear of very good quality on most soils, and usually a great bearer; ripe about the middle of November. Baron Leroy is a new and very promising variety of large size and good colour; ripe at the same time as the last-named, and should prove a fine exhibition sort. Beacon

is a large and very handsome variety, of fair quality; middle of August. Beurré Alexandre Lucas and Beurré Fouqueray are two large handsome varieties of fine flavour, and when better known will be in demand for exhibition. Beurré Baltet Père is usually a grand Pear on cordon-trees, being very large, highly-coloured, and of rich flavour; end of November. Beurré Hardy is very fine on all forms of trees, excellent as a cordon, and of fine quality: October. Beurré Mortillet is a new variety, a good grower and bearer, of first-rate flavour, very large, and is sure to be largely grown in the

FIG. 221.—PEAR THOMPSON'S.

future; September. Beurré Superfin is a well-known delicious and prolific variety; November. Bon Chrétien (Williams), a well-known favourite, ripe in August; but to get it at its best the fruit should be picked a little before it is

fully ripe, and placed in a fruit-room to finish—not on a viney or greenhouse shelf, as is frequently done. Clapp's Favourite cannot be termed first-class in flavour, but it is useful for its earliness, large size, splendid appearance, and free-bearing; August. Directeur Hardy is a new variety that is said to be of superior merit and a great bearer of large fruit; November. Doyenné du Comice is probably the finest Pear in cultivation, surpassing the well-known Marie Louise, and may be strongly recommended as a cordon or trained tree against a wall, producing heavy crops of large, handsome fruit; November. Duchesse d'Angoulême is only valuable for exhibition purposes; the fruit is very large, and freely produced, but decidedly second-rate in flavour; November. Durondeau is a very handsome Pear, of good size, delicious flavour, and a great cropper; October. Glou Morceau is a valuable variety, and should be left on the tree until beginning to fall; it will then afford a supply of fruit of excellent quality about Christmas and the New Year. Le Lectier is a new variety, promising to be a great acquisition; small cordon-trees have borne large fruit, of fine flavour, ready for use in February. Louise Bonne de Jersey is a well-known and reliable variety, and though it bears profusely as a cordon, we consider it best flavoured from bush or standard trees; October. Marie Louise is another universal favourite, succeeding well as a cordon; November. Marie Benoist is a large, fine-flavoured variety, fruiting abundantly; December. Magnate, a large, handsome variety, a good grower and bearer; October. Marguerite Marrillat, a new, very large, handsome variety, of delicious flavour; September. Nouvelle Fulvie is large, but not handsome, of good flavour, and a heavy cropper; January and February. Pitt-maston Duchess, of enormous size on cordon-trees, fine golden

FIG. 222.—PEAR CONFERENCE.



yellow, of good shape, and fairly rich flavour, indispensable for exhibition ; October and November. *Souvenir du Congrès*, a very large, handsome variety, of first-class flavour ; August. All the above answer admirably as cordon or any other form of trained trees planted against a wall, and are free bearers of large, handsome fruit, suited for exhibition. To have the fruit thoroughly developed, all deformed or badly-placed fruit should be pulled off while small, taking care not to over-crop, and feeding the bearing trees occasionally with diluted liquid manure or some of the prepared manures advertised.

The following are smaller varieties of excellent quality succeeding on cordon or trained trees. *Baronne de Mello*, a delicious November Pear, a great bearer. *Beurré Giffard*, a rich-flavoured variety, ready for use early in August. *Beurré d'Amanlis*, large under good culture, of excellent flavour, and a free bearer ; September and October. *Beurré Goubault*, an enormous cropper and of good flavour ; September. *Doyenne d'Ète*, a delicious little variety ; ripe in July, and should always be eaten from the tree, for if kept a few days the fruit is mealy in taste. *Fondante d'Automne*, a very fine October Pear of the highest quality, and a heavy cropper. *Jargonelle*, a delicious variety in its season, but not suitable to grow as a cordon. *Josephine de Malines*, one of the most valuable Pears. The tree bears most profusely in all forms, and the fruit is rich and late, generally in use about February or March. *Knight's Monarch* is first-rate on many soils, and is in use at the same time as the last-named. *Seckle* is an exquisite little variety, but more suited for bush or standard trees. *Thompson's* (Fig. 221) is a grand variety when against a warm wall, the flavour being very rich and distinct ; November. *Winter Nelis* is a valuable mid-winter variety ; the tree should have a warm position, when the fruit is of the highest quality.

All the varieties mentioned will succeed not only as cordon or other trained trees, but also as bushes or pyramids, except those recommended to be planted against a warm wall ; these would be doubtful as trees in the open, unless the locality were specially favourable. The warmest and most sheltered position in the garden should be chosen for the bush or pyramid Pear-trees, as they are easily injured by cold winds and frost, and every effort should be made to keep the trees healthy and vigorous without grossness.

Standards.—In many parts of the country, Pears make large and prolific trees when planted as standards, and where this is the case, they might with advantage be dotted about the pleasure-grounds or park as isolated specimens, or arranged in clumps. Regarded merely as objects of beauty, they are magnificent when in full blossom, and in many seasons they produce immense crops of fruit. *Stewing Pears* have been much neglected by

planters, yet the well-known and excellent stewing variety, Catillac, makes a large tree as a standard ; it is one of the hardiest and most fruitful sorts that can be grown, and should be much more extensively planted. And not only is it the best stewing Pear, but it also keeps well into March. Verulam is another stewing variety in use up to the end of March. The tree is a strong grower, hardy, and prolific.

The following are *Dessert* kinds that succeed admirably as standards on good soils : Beacon makes a good tree, and crops freely ; when the Pears are ripe in August, the tree is very effective, most of the fruit being highly coloured. Belle Julie is not a very handsome or a large fruit, but the tree is a free bearer, and the fruit of very pleasing flavour. Beurré d'Amanlis is excellent in flavour, and quickly develops into a large, spreading tree on good soil. Clapp's Favourite is a tremendous cropper on standard trees, and is much improved in flavour when in an open situation. Colmar d'Ete is another great bearer ; the fruit is small but of exquisite quality. Dr. Jules Guyot is, like the last-named, a September Pear, but large, handsome, and a continuous bearer. Durondeau makes a splendid and fruitful tree, and should always be selected. Eyewood Bergamot is another really first-rate variety, being hardy, strong, and a great bearer ; its delicious fruit is ready about November. Elton is a September or October variety ; the tree is hardy and vigorous, and the fruit of rich flavour. Louise Bonne de Jersey and Marie Louise d'Uccle are two October varieties, and are heavy bearers of large, handsome fruit. On warm soils Ne Plus Meuris is a desirable variety as a standard, fruiting freely, and ripening in February. The delicious little Seckle is a most productive variety, and well worth planting. Aston Town is an old but now somewhat rare variety of the highest quality ; it ripens in September, and is one of the greatest bearers.

Other good varieties for bush, wall, or standard trees are : Conference (October) (Fig. 222), Leon Leclerc (December), Beurré Anjou (November), Emile d'Heyst (November), Des Deux Sœurs (October), and Marie Guise (February and March).

With few exceptions the animal pests of Pears and Apples are identical. Of those which may be considered peculiar to the former is the Pear Midge (*Diplosis pyrivora*) and the Pear-leaf Blister Mite, responsible for the blisters which damage the foliage. Each of these blisters has a minute hole in the centre below. At first the discolourations are red, but ultimately they are black. Removal of the infested leaves in spring and burning them is a laborious but certain method of lessening the attack another season, especially if this be followed early in the next year by spraying with a solution of Kerosene Emulsion—using one part of this to six parts of water.

Diplosis pyrivora is a dipterous gnat-like fly, which appears in the early spring, the females depositing their eggs in the unexpanded blossoms. The larvæ when hatched enter the young fruit, hindering its growth, causing it to be deformed, to crack, and eventually to fall. The pupal state is assumed in the soil, and the insect passes the winter in that condition. Spraying with arsenite is not of much good, as to do so when the fruit-trees are in blossom would be to sacrifice the whole crop; while, once the insects are in the young fruits, they are perfectly safe from insecticides. Preventive measures consist in the collection of the fallen fruits which show signs of infestation, and burning them before the larvæ can enter the ground to pupate. In America, kainit, as a dressing under the trees in late summer, has been found of service, using it at the rate of half a ton per acre. The gnat is only 2mm. long, and the larva also about 2mm., yellowish, and footless. These larvæ are very lively, and move by a series of jerks and bends much after the fashion of the aquatic larvæ of certain relatives. Infested fruits which are hanging might readily be shaken on to sheets laid under the trees.

Gymnosporangium sabinae is a heterococous fungus responsible for a peculiar disease, characterised by blotches of a yellowish-red colour in autumn. This is but one stage in the life-cycle. The dark-reddish teleutospores are developed on certain species of *Juniper* (of which the common kind is one) in spring. In combating this disease the difficulty lies in discovering the whereabouts of this host-plant. It may be in the garden of a neighbour, who might object to having his trees destroyed for what he may regard as a sad. The Pear-tree stage is sometimes known as Pear-leaf Rust (*Roestellia cancellata*).

Plums and Damsons.

With good drainage, almost any soil will grow these well, although some varieties of Plums will not prove satisfactory in cold or exposed situations; all the Gage class require a fairly warm soil and position. Others are reliable even in cold localities, and of these hardy varieties Dove Bank is a very good one. The Czar, White Magnum Bonum, Victoria, Orleans, and Sultan have all proved hardy and fruitful under what may be termed unfavourable conditions. Again, in Apple-growing counties, when old orchards are exhausted, it is a well-known fact that Apple-trees do not follow Apple-trees well; but Plum-trees thrive splendidly after Apples, and also after Pears. Some growers even plant their Plum-trees between the Apples and Pears a few years before they abolish the latter, and in this way the Plums are in a bearing state by the time the other trees are cut down. It is unnecessary to state the distance that the trees should be apart, as the advice given as to how Apples should be planted is applicable

to Plums. Here it will suffice to state that standard Plums are useful trees to plant in the park or grounds for effect—not to the same extent as Apple-trees, but a few in clumps form a pretty group when in flower.

The following varieties are excellent as standard trees for the above purpose or for planting in orchards: Belle de Louvain, an upright-growing, free-bearing variety, with very large, reddish-violet fruit; it should prove a valuable market Plum, ripe in September. Cox's Emperor (Denbigh Seedling), a large, roundish, dull-red fruit, borne in profusion on strong, vigorous trees; September. Early Prolific, a small, blue-black variety, very hardy, vigorous, and a great cropper; July. Monarch, a comparatively new variety, with very large black fruit, and promises to be a valuable kind on all forms of trees. Pond's Seedling, one of the largest-fruited varieties; the trees are strong, hardy, and produce good crops of beautiful red fruit; end of September. The popular old Victoria is a capital variety as a standard, always cropping well unless the seasons are very bad; its large, reddish-pink fruits are alike valuable for home use or for market.

Cordons.—Very few people are aware how wonderfully well the Plum succeeds as a cordon-tree, and what beautiful fruit is produced; the bloom on the ripe fruit gathered from cordon-trees trained against a wall has an appearance like that seen on hot-house Grapes, and it is against walls or wooden fences that we would specially suggest planting cordon-trees, particularly those of the Gage class, amongst which the following are superb: Bonne Bouche, Bryanston Gage, Comte de Athems, Denniston's Superb, New Early Transparent, New Late Transparent, Oullin's Golden, Reine Claude de Bavay, and Reine Claude Rouge. All the other sorts of Plums will also answer as cordon-trees, but those named above are the most deserving and richly flavoured.

Bush or Pyramid Trees.—For these the under-mentioned varieties are very reliable on most soils; they are placed in their order of ripening: Early Prolific, Czar, Early Orleans, The Sultan, Denniston's Superb, Belgian Purple, Transparent Gage, Victoria, Washington, Jefferson, Kirke's, Pond's Seedling, Monarch, Grand Duke, Coe's Golden Drop (on warm soils), and Wyedale. All the varieties of Plums named for cordon-, bush-, or pyramid-trees will answer famously as fan or other trained form of trees against walls.

DAMSONS are very fruitful, whether as standards, half-standards, or bushes, and are of great service in forming shelter round the outskirts of the garden or fruit-plantation. Bradley's King (King of the Damsons), Hereford Prune, Frogmore Damson, Crittenden, and Shropshire Prune are all remarkably prolific varieties on any form of trees; the first-named is perhaps the largest-fruited sort, but all are excellent.

The pruning of Plums or bush Damsons should first be done a little before the fruit commences to colour, thinning out the growth where congested, and cutting back to about five eyes any shoots that are not required to enlarge or develop the tree. The shoots left may remain nearly their full length unless very strong and likely to throw the head out of balance ; in that case they should be cut out entirely or shortened back. Plums on walls should have all fore-right shoots cut in to three or four buds, and the leading ones nailed in two or three times in the season. Plums or Damsons, in whatever form, are best finally pruned for the year immediately after all the fruit has been gathered ; in fact, all stone-fruit trees are better pruned then, as much gumming is caused by late pruning.

Silver Leaf is a most puzzling disease, doubtless of fungoid origin, found upon Plums, Greengages, Peaches, Sloes, Birdcherries, and Portugal Laurels. It is most destructive. The foliage of the affected trees turn silvery on their upper surface, and somewhat sickly-looking, yellowish, on the under-surface. Very frequently the upper cuticle separates from the other leaf portions. The fruits become brown, and are shed in large quantities, and the disease seems to spread rather rapidly. The specific fungus responsible for the mischief has yet to be discovered, but it is believed to be a near relative of *Exoascus deformans*, already referred to under Peaches. The treatment found of most avail is to lift the trees at the proper season—when inactive—and dress the soil with sulphate of iron ; or the affected portions may be cut out. Root-pruning has also in certain cases proved beneficial. In this latter case the "wood" must be the guide to the gardener.

Though these fruits have many animal foes, few of those that may fairly be entitled to be classed as pests are identified only with the Plum ; the majority, in fact, are general feeders. The very locally distributed *Xyleborus dispar* is now and again reported to tunnel into Plum-trees in this country, but the writer (though an old coleopterist) has never yet met with the creature in either orchards or gardens. Kollar refers to its ravages on the Continent, calls it the Apple Bark Beetle, and describes it under the generic name of *Bosstrichus*.

Closely allied to the Codlin Moth is a species known as the Plum Moth, or Plum Tortrix (*Opadia funebrana*). The Moth is barely $\frac{3}{4}$ in. in width, and is on the wing in summer. The eggs are laid upon the young fruits, and, when the larvæ hatch out, they burrow into the Plums, causing them to colour immaturely and to fall. The larvæ are of a pale-reddish colour, with a black head ; they escape from the fruit, and pass the winter under the bark, pupating in the following spring. Insecticides are useless unless they are sprayed on before the pests have entered the fruit. Prevention is best ; and the grower should

carefully collect and burn all fruits which fall early in the season. He should also shake the trees to dislodge any fruit attacked which are holding on. The bark should be carefully treated when the trees are at rest in winter, using caustic potash and soda, as elsewhere advised.

Though the Brindle Beauty Moth (*Biston hirtarius*, Fig. 223) is usually regarded as partial to Oak and to Elm, yet it now and again appears as a pest to Plum- and less often to Pear-growers.

The Moth has greyish-brown forewings, with irregular transverse markings and slightly paler hindwings. The larva is reddish-brown or purplish-brown, relieved by a yellowish-brown band and yellowish dots. It is found in early summer. Spraying with Paris Green is the best remedy, as the caterpillars are voracious eaters. They

FIG. 223.—CATERPILLAR AND PERFECT INSECT OF
BRINDLE BEAUTY MOTH.

pupate beneath the soil and remain there until the next season.

Belonging to the genus *Exomscus*, one species of which has already been noticed as injurious to Peach-trees, causing Leaf-Curl, is a fruit-deforming kind, *E. pruni*. This is responsible for the Pocket Plums or Bladder Plums. The latter is a most appropriate name, as affected Plums resemble a blown-out bladder. The disease attacks the young fruit, which undergoes modifications quite deforming it and rendering it useless. Such Bladder Plums are tough, wrinkled, greenish-yellow, or reddish and stoneless, and in late summer are covered with a glaucous powdery substance, by means of which the disease is spread. Unfortunately, the mycelium is of perennial duration, and therefore it is not sufficient to destroy the Bladder Plums. Professor Marshall Ward recommends, in his excellent little work upon "Plant Diseases," to prune back to the old wood. Spraying with Bordeaux Mixture two or three times at intervals early in the season would act as a preventive to this and many other fungoid diseases.

Quinces.

Unlike most fruit trees, the Quince is most successfully grown in moist soils or situations, and is therefore at home by the

sides of lakes or streams. The best varieties are the Apple-Shaped, Pear-Shaped, and Meech's Prolific. Champion and Reay's Mammoth are new varieties that cannot be recommended until they have been tested for a few more years.

Raspberries.

In many gardens these delicious fruits are not the success they should be, owing to the natural character of the soil, or to their being planted in too hot and dry a position. To get the best results, it is essential that the situation be cool and moist, yet not waterlogged, at the roots; for that reason the plants make better growth, and the fruit is larger and borne in greater profusion on somewhat heavy soils than on light, hot, sandy ones. The plants also quickly become exhausted on thin, hot soils, unless annually mulched with good farmyard manure; and, even then, it is wise to make a new plantation every four or five years, selecting fresh soil for the plants.

Before planting, the ground should be thoroughly cleansed of all noxious weeds, such as Couch-Grass or Convolvulus, and the ground deeply worked. Planting may be done at any time between the end of October and the middle of March, when the soil is in a good working condition. The canes or stools should be placed in clumps of three (if single canes) in the form of a triangle, and there should be 5ft. each way between the clumps. In March the canes should all be cut down to within 6in. of the soil; this may appear a drastic measure, but it is a wise one, as unless it is done, weak canes are produced, and a whole season is practically lost. On the other hand, by cutting down the canes as advised, stout vigorous ones are made that will yield an abundant crop of fruit the following year. It should always be borne in mind that the Raspberry is a surface-rooting plant, and to dig amongst the canes destroys a large quantity of the finest and best roots, indirectly acting detrimentally on the health and vigour of the canes; therefore only the surface-hoeing necessary to keep down weeds is advisable. A mulch of farmyard manure should be applied annually in the spring, to feed the surface roots and thus maintain the strength of the plants; this mulch and the frequent use of the Dutch hoe will also assist materially in conserving moisture in the soil, and the hoeing will expose the larvae of insect foes to the keen eyes of birds or poultry.

The pruning should, if possible, be done immediately after the fruit has been picked, cutting out all the old fruiting canes and most of the weak ones, and leaving only about seven of the strongest canes to each stool or clump. If more are permitted to remain, the growth becomes congested in the following season, and the fruit is neither so fine nor so plentiful. Market-growers do not stake their canes, but simply shorten them back a little, and as they always liberally manure, their canes are strong and able

to support a crop of fruit without the aid of stakes, &c.—an example that might be imitated by private growers in many instances.

In selecting varieties to plant, the comparatively new sort, Superlative, is a great acquisition; not only are the canes practically self-supporting by reason of their stoutness, but the variety is an abundant bearer of large, handsome fruit of excellent quality. For small gardens, or where tall-growing Raspberries are objectionable, Carter's Prolific is a most desirable sort, the canes being of moderate height, strong, and bearing heavy crops of large, sweet fruit. Norwich Wonder is a favourite variety with market people, being a strong-growing and remarkably fruitful sort, and seldom failing to produce good crops of large, highly-coloured fruit. Northumberland Fillbasket is another sterling variety very similar to the last-named, and alike valuable for home use or market purposes. Semper Fidelis is a rather later fruiting variety than any of the above, and is only useful for cooking, not being sweet enough for dessert, but it is a good bearer. Yellow Antwerp and White Magnum Bonum are in use with the varieties already named, but except for giving a change in the colour of the fruit for dessert, they are not worth planting, as they never carry such good crops as the red-fruited varieties.

Where autumn Raspberries are appreciated, the variety named Four Seasons is the best to plant; in November, 1897, we frequently picked good dishes of fine sweet fruit. These autumn-fruited kinds bear on the young wood of the current year's growth. All the very weak, useless canes should be cut out early in the season, and the vigour thrown into the best and stoutest canes, thus inducing them to produce large fruit freely.

The Raspberry Beetle (*Bjaturus tomentosus*) is most troublesome to the grower. The damage is twofold, the Beetle eating the flowers and the larvæ the fruit. The Beetle is $\frac{1}{6}$ in. long and reddish or brownish, and intensely downy (Fig. 224); the larva is yellowish, with a paler head. Little can be done in the case of the larvæ; but the Beetles, on a dull day, may be shaken from the trees on to tarred boards or paper, and afterwards collected and destroyed. Careful search should also be made for the cocoons which are in the bark. All infested fruit should be burnt, as should all old canes removed at pruning time.



FIG. 224.—RASPBERRY BEETLE.

Lampronia rubiella (Raspberry Moth) also does much damage alike to young fruits and shoots. The Moths are under $\frac{1}{6}$ in. in stretch of wings, and brown with yellowish dots and spots. The

eggs are laid in summer in the flowers of the Raspberry, and the red larvae live in the fruit until they are full-fed, when they spin a cocoon for themselves in which they remain all the winter, coming out in spring to wage war upon the young buds and shoots. The only way to combat the pest is to pick off all drooping shoots and promptly burn them. Insecticides are useless.

Raspberry Rust (*Phragmidium rubi-idaei*) is fairly common in spring on the upper surfaces of the leaves. These are covered with yellowish dots, which eventually become almost black. Dusting with flowers of sulphur is useful. The disease, however, is not usually regarded as of a very destructive character.

Strawberries.

Perhaps no kind of fruit is more universally cultivated than the Strawberry, as it accommodates itself to all sorts and conditions of soil, and always rewards the cultivator for any special attention bestowed upon it. Even on light, hot soils, gardeners are, by careful management and judicious manuring, able to obtain more or less satisfactory crops of delicious fruit. On good, rich, loamy soil it is an easy matter to grow really magnificent fruit with a minimum of trouble; but on light soils the case is different, and close attention must be paid to the plants at all times in order to procure full crops of luscious fruit. In the first place the land must be deeply dug, and manure of a heavy nature (such as cowdung in a fresh state) worked in while digging. Sewage, sludge, or marl, are all useful to dig in, as they are close, and help to make the soil heavier and more retentive of moisture. Stable manure is not advisable (unless no other is procurable), as being light and porous, it has a tendency to make the soil still lighter. On tenacious, heavy soil the conditions are reversed, and strawy manure (such as that from stables) is the best to dig or trench in, as it assists to lighten the soil and render it more friable and porous, while adhesive manure, like that from cows, would have a contrary effect. Nothing will equal the good judgment of the cultivator in deciding which manure is the most suitable for his particular soil, but of whatever character it may be, trenching or deep-digging is advisable. The manure should not be spared. On light, thin soils the beds will be exhausted in two or three years, and on deep, heavy good land they will remain satisfactory for six or seven years.

Every effort should be made to plant new beds as early in August as young plants can be procured, as then they have sufficient time to form good crowns during the autumn, and a crop of large berries is produced the next season. If this operation is postponed, the plants have not time to become properly rooted before winter sets in, and no fruit is borne the following

year. The distance apart at which to plant varies a little with the nature of the soil: if light and hot the rows may be 2ft. apart, and the plants 18in. from each other in the rows; on deep and rich soil the rows should be 2½ft. to 3ft. apart, and there should be 18in. between the plants. Care must be taken not to plant too deeply, simply inserting the runners up to the lower leaves without burying the crown, and making the soil thoroughly firm about the plant. If the weather or soil is dry a good soaking of water should be given after planting, to settle the soil about the roots and give the plants a start. All runners that form should be promptly removed, and weeds should be kept down with a Dutch hoe during the autumn months.

In spring, when new growth is being made, a good mulch of strawy manure is advisable; this will conserve moisture, feed the roots, and also prove a very suitable material for the runners to strike roots in—that is if required to increase the stock—otherwise all runners should be cut off, as they rob the plant and fruit. Immediately the fruit is set, diluted liquid manure or a little nitrate of soda put between the rows will act beneficially on the plants and swell the fruit considerably; but all stimulants should cease when the fruit commences to colour or the flavour will be impaired. The above method should be carried out annually until the beds exhibit signs of being worn out. A fresh plantation should then be made on land that has not had the same fruit on it for some years, as Strawberries should on no account follow Strawberries on the same ground: it is only courting failure through disease and insect foes.

There are quite a host of varieties to select from. Many of them are of no value, while others are excellent in every respect. Amongst the latter, Royal Sovereign is a magnificent and early sort, bearing very heavy crops of large and delicious fruit. Countess is a rare variety of the finest flavour on light soils, but not so good on cold soils; where it succeeds it is one of the best Strawberries. President, though an old variety, is still first-rate, and worthy of a position in every garden by reason of its heavy crops of richly-flavoured fruit. Sir Joseph Paxton is a favourite mid-season variety, and well maintains its good reputation. British Queen is well known for its exquisite flavour, but it is not always a success, as it requires a good warm soil to grow it well. Veitch's Perfection is a new variety of the richest flavour and will supersede Waterloo as a late variety, being more fruitful and of better colour and flavour.

Alpine Strawberries.—It is somewhat remarkable that the sweet and extremely useful Alpine Strawberry is not more extensively grown, more especially in the gardens of the wealthy, as the fruit comes into use at a season when Strawberries are very rare—viz., the late autumn—and thus provides a welcome change in the dessert. Seed may be purchased from several of the

leading seed firms—notably Messrs. Sutton and Sons, of Reading—and should be sown early in March in boxes of light, rich soil in gentle heat. When the germination is well advanced, the seedlings should be gradually removed to a cold frame, and early in May should be planted out, 1 ft. apart, in good soil on a somewhat shaded border, encouraging growth by copious supplies of water overhead and at the roots during dry or hot weather. Failing the possession of glass to raise the seedlings early, the seed may be sown on a warm border early in April, and the seedlings planted out when large enough to handle. In the autumn many dishes of pleasing and refreshing fruit will be forthcoming. It is advisable to throw away the old plants when they have done fruiting, and to raise fresh stock from seed every year: much finer and better fruit is thus produced.

Strawberries outside are attacked by two or three species of voracious Ground-Beetles, which, forsaking for a time their carnivorous diet, feast upon the ripening fruit. *Harpalus ruficornis*, a very common Beetle, is one that is found in enormous numbers in Strawberry-beds, the mulching usually provided affording it a safe harbourage in the daytime. It feeds at night. The insect is about $\frac{1}{2}$ in. long, flattish, and dark as to colour. Indeed, the head and thorax are quite black, and the only relief to its general sombre colouring are the red legs, antennæ, and the down upon its wing-cases. The larval state is passed beneath the soil. This insect is winged, contrary to what is usual in the Ground-Beetles found in this country.

Pterostichus (Steropus) madidus (Fig. 225) is even commoner than the *Harpalus*, and is altogether a larger insect, reaching $\frac{3}{4}$ in. long. It is shiny black, ovate, convex, with a distinct furrow in the back, and much streaked. The legs of this insect are sometimes red. The Beetle is very common in gardens and is wingless. Equally common is *Calathus cisteloides*, another wingless insect, but swift of foot. It is black, approaches $\frac{1}{2}$ in. in length, and is very fond of sheltering beneath stones and fallen leaves. The above, with perhaps *Zabrus gibbus* and a few of the Sunshiners (*Amara*), are the exceptions in the family *Carabidae* to those feeding exclusively upon flesh.

In the case of a small garden the Beetles may be hand-picked by dislodging them from their hiding-places during the day; but where there are acres of the fruit under cultivation something less laborious would necessarily have



FIG. 225.—*PTERO-STICHUS MADIDUS.*

to be adopted. The paste known as the Magic, if properly distributed, soon thins them down; or Ramsden's Beetle Paste may be employed.

A species of Eelworm works havoc with Strawberries, distorting the stems and other parts of the plant, and doing a vast amount of injury. The species is *Aphelenus fragariae*. No remedial measures are known.

Several fungoid diseases affect the Strawberry, one of the commonest being the Leaf-Spot (*Sphaerella fragariae*). The common name gives a clue to the chief characteristic of the disease—the spots on the foliage. These occur on the upper surface, and increase in size and colour as the different stages are reached; usually they coalesce. They are at first dark purplish; then the central portion lightens until it is nearly white, and the blotches by this time are of large size, and practically the whole leaf-surface is discoloured. When this is the case, the foliage is shed, and in very bad cases the plants die. In America the somewhat heroic treatment of mowing the plantation after the crop has been gathered, and then firing the tops by the aid of straw, is adopted; but the remedy when suggested here was regarded as worse than the disease. There seems, however, to be little doubt as to its efficacy, and it is well worthy of a trial, followed the next season by spraying with Bordeaux Mixture. In America the disease is called the Strawberry Leaf Blight, and those who would like to peep farther into its life-history should read Prof. Scribner's article in the Report of the United States Department of Agriculture.

Strawberry Mildew (*Sphaerotheca humuli*) attacks both leaves and fruit, rendering the latter useless. Sulphide of potassium (1oz. to 3galls. of water) should be applied in spring as soon as the curling of the leaves is noticed.

Vines. See "Grapes."

Walnuts.

These trees will succeed in almost any kind of soil. Unfortunately our ancestors did not always plant the best varieties, as some of the large trees about the country produce nuts of small size, with very thick, hard shells. Noyer à Bijou is a variety with large nuts, having thin shells, and of good flavour. Thin-shelled is another fine sort, and a heavy cropper; Franquette is also excellent on deep, warm soils. All the above develop into large and beautiful trees; but if a small-growing Walnut is desired, Dwarf Prolific will supply the need, for, as its name indicates, it is dwarf and prolific, and makes a fruitful bush.

Wineberry.

This, the fruit of *Rubus phænicolasius* (Fig. 226), is bright scarlet, and though not sweet enough for dessert purposes, is



FIG. 226.—WINEBERRY (*RUBUS PHÆNICOLASIUS*).

excellent for culinary use. The plant thrives best in a somewhat dry and very sunny position, and should have an annual mulching of rotten manure in spring.

CHAPTER X.

VEGETABLES.

Soils and Subsoils—Artichokes—Asparagus—Beans—Beet—Borecole — Broccoli — Brussels Sprouts—Cabbages—Capsicums—Carrots — Cauliflowers—Celery—Chicory — Cucumbers — Endive — Herbs— Horse Radish — Leeks — Lettuce — Mushrooms — Mustard and Cress—Onions—Parsnips—Peas—Potatoes—Radishes—Rhubarb — Salsify and Scorzonera—Savoys—Seakale—Shallots—Spinach — Tomatoes—Turnips—Vegetable Marrows.

To obtain tender vegetables of a sufficiently high quality to give perfect satisfaction at home, or to win prizes at horticultural exhibitions, the soil must in the first instance be properly prepared by deep digging or *trenching* and liberal treatment with good manure. As regards trenching, the mode in which it ought to be done depends almost entirely on the character of the soil and sub-soil. With a heavy soil and a cold, tenacious sub-soil, *bastard trenching* is the best: this consists of turning over the lower spit and mixing therewith strawy manure, road-scrapings, or vegetable refuse. Such treatment will improve its character, and make it more porous, while the surface soil is still retained on the top, leaving it as rough as possible. On soil of a loamy nature several feet deep it is a good plan to turn the whole right over to the depth of 2ft., *i.e.*, bringing the bottom to the surface and placing the surface soil at the bottom, incorporating manure at the same time. In this way a fine root-run is provided for the vegetables, the drainage is improved,

and vegetables of all kinds thrive famously in wet or dry seasons. When the ground is dug one spit deep year after year the root-run is very limited, owing to the hard pan formed, which is impervious to the descent or ascent of water, and there is nothing to marvel at in the crops being unsatisfactory or collapsing entirely. If one-fourth of the garden is trenched every winter, the labour will scarcely be felt, and in four years the whole will have been done, and another commencement can be made. The results will amply repay for the extra labour, and the produce will be of such a high order that it may be relied upon not to disgrace the grower anywhere. Next in importance to deep cultivation is the constant moving of the surface soil during the growing season. All vegetables seem to heartily enjoy this form of cultivation: not only are weeds kept down, but moisture is conserved, and the soil kept in the most favourable condition for root action. By the above system the writer has secured honours at leading shows in all parts of the kingdom and supplied large establishments with daily supplies of vegetables in considerable variety at a moderate outlay in seeds and labour.

Artichokes.

Globe Artichokes (Fig. 227) are easily propagated by seeds sown in deeply-worked and rich soil in March or early in April. Select a well-drained sunny site, and sow the seed very thinly. Four feet apart is a suitable distance between the plants, and to that distance the young plants should be thinned.

Keep down weeds, and give one or two soakings of liquid manure during the summer. On the approach of frosty weather the base of the



FIG. 227.—GLOBE ARTICHOKE.

plants should have some coal-ashes or litter placed close up to the hearts to protect them, removing the same in spring. There is little difference between the Green Globe and the Purple Globe, both varieties being satisfactory when well grown.

Jerusalem Artichokes (Fig. 228) are seldom the success they could be made if better cultivated. As a rule, they are planted in the worst part of the garden, but when given an open, sunny position, with sufficient room for development, and a rich soil, the tubers are not only freely produced, but are also large and of superior flavour. To grow them well, the ground should be deeply dug and well manured in the autumn or winter, incorporating fresh or green manure, and leaving the soil on the surface as rough as possible. At the end of February or early in March, when the soil is in good working order, the tubers should be planted in lines 3ft. apart, allowing 18in. between the tubers in the lines. When about 8in. high, the plants should have the soil drawn up to them, as with Potatoes, and weeds should be kept down during the summer. When the tops die back in the autumn all the tubers may be carefully lifted and stored in a cool, frost-proof shed, the same as other root crops.

Asparagus.

It is now well known that very fine Asparagus may be grown without going to the expense formerly incurred in taking out soil to the depth of several feet and replacing with expensive compost. Providing the drainage is good, any fairly porous soil can be made to grow Asparagus as easily as any other vegetable. If the soil is sandy or a good porous loam, deep digging and liberal manuring in the autumn or winter will be preparation enough. When the soil is clayey or tenacious, however, the addition of material to make it more porous is essential—sand, road-scrapings or parings, ashes from burnt rubbish, and strawy manure, are all excellent. In digging or trenching, the surface soil should be left as rough as possible, thus fully exposing it to the action of the weather. By the end of March the soil will be in a nice crumbly condition, and in capital order for seed-sowing. Beds may be made 5ft. wide, a drill being drawn down the centre, and on each side another drill should be drawn 18in. from the middle one, or 1ft. from the side. Thin sowing is advisable, as the plants ought to be thinned out to 18in. apart in the rows when large enough. The after-treatment consists in keeping



FIG. 228.—JERUSALEM ARTICHOKEs.

down weeds by hand and in giving an occasional dressing of salt or kainit at the rate of 2oz. to the square yard during the growing season. Another method is to sow in drills 1½ ft. or 2 ft. apart on level ground, without any beds or alleys, thinning out the plants as above advised when large enough. In the spring a mulch of rich farmyard manure applied to the bed or plantation exercises a powerful influence on the growth, and conserves moisture in the soil during hot weather. Some growers apply the mulch in the autumn, after the tops have died and been cleared away, but there is no doubt that spring mulching is more beneficial.

If new beds are to be made by planting, and not from seed, the best time to start is when new shoots have been made 1in. or 2in. in length, taking care that the roots are kept moist while out of the soil, spreading them out evenly in planting, and giving a thorough soaking of water immediately afterwards if the soil or weather is dry. No shoots or "grass" should be cut from plants raised from seed before the third year after sowing, and even then the cutting should be light.

For growing outside or for forcing few varieties will equal Connover's Colossal, which is closely followed by Argenteuil Giant. The latter is largely grown in France, much of the "grass" finding its way to our markets.

Asparagus cultivators are seriously troubled by the attacks of a small (½in.) but very handsome Beetle (*Crioceris asparagi*) and its larvæ. The Beetle is bluish-black or greenish, bordered with red; the thorax is red, and the wing-cases have a black cross formed by the suture and a branch on either side, and three yellowish spots at their margins. The perfect insects are found in summer, and the females deposit their eggs on the stems of the plants. The larvæ are greyish or greenish, and have black feet and head. Both grub and perfect insect are destructive. Hand-picking is best for the former, and a kerosene emulsion for the latter. After the season is over, powdered hellebore may be dusted on the plants.

Beans.

Although Broad Beans will thrive on almost all soils, that which is somewhat heavy is best suited for the production of heavy crops and the finest pods; consequently the heaviest portion of the garden should be selected for them. Ground that has been moderately or well manured during the winter will be in good condition for the reception of the seed. Sow the first crop early in February, and at intervals of three weeks up to the end of March for successional supplies; after that date it is little good sowing, as the weather is unfavourable to good produce. The seed should be sown in drills about 3in. deep,

in double lines, and the rows 3ft. apart, with 6in. between the seeds. This is ample space between the rows, whether double or single. As the plants progress, soil should be drawn up to them on each side of the row. Immediately it is seen that the flowers are set, and embryo pods formed, it is an excellent plan to pinch out the points of the plants. This assists the pods to swell, and keeps Black Fly in check. If exhibition pods are wanted, the plants ought not only to be fed with liquid or solid farmyard manure, but also staked, and each permitted to carry only about three of the straightest and longest pods. The Long-pod section has much the longest pods, Veitch's Exhibition, Leviathan, and the Early Long-pod being the best, in the order named, for home or exhibition purposes. If extra good flavour is desired, the shorter-podded Green Windsor is the best of all.

Dwarf or French Kidney Beans. — This most productive vegetable should be sown in drills and at the same distances apart as advised for Broad Beans on any rich and deeply-worked soil. Make the first sowing in the middle of April, and another sowing a month later, selecting such a variety as Ne Plus Ultra for the first, and Canadian Wonder for the second sowing. These are great croppers, the pods being long, handsome, and tender, and very suitable for home use or for exhibition. As these Beans are both gross feeders and heavy bearers, frequent applications of diluted liquid manure are very sustaining to the plant when cropping; but what is of as much or more importance is the careful removal of all pods when large enough for use. When once the pods have commenced to form seeds, the whole energy of the plant is devoted to reproduction, and no further crop is obtainable.

Scarlet or Runner Beans. — To obtain heavy crops of this universally esteemed vegetable the ground should be deeply dug and heavily manured; or shallow trenches should be prepared, in which place a layer about 6in. deep of well-decayed farm-yard manure, with several inches of good soil on the manure. On this the seeds may be arranged about 6in. apart in double lines in the row, and the rows at least 6ft. apart; or if possible it is better to isolate the rows, thus giving more light to both sides. It is seldom safe to sow the seed before the end of April, and as it germinates the young growth should be protected from Slugs by dusting the soil with soot or air-slaked lime, otherwise all the plants will probably disappear. Soil should also be drawn up to each side of the row when the plants are large enough, and stout sticks put in for the growth to cling to. If the flowers seem to set badly, or the plants appear to languish, a thorough soaking of liquid manure in a diluted form will put matters right, providing the pods are not allowed to go to seed. Chelsea Giant White, Hill's Prize

Exhibition, and Neal's Ne Plus Ultra are all abundant croppers, with long, handsome pods, first-rate for home use or exhibition purposes.

Broad Beans are virulently attacked by Black Fly, and should have their tops pinched out and burned ; while occasionally Kidney Beans are infested with what is known as Bean Anthracnose (*Colletotrichum Lindemuthianum*). On the Continent and in America this disease is far more prevalent. It is characterised by a spotting of the leaves, stems, and also of the pods. The spots are brown, with reddish margins, and depressed. They are small at first, but usually coalesce. The seeds are sometimes involved, and, on this account, it is injudicious to save those from infected quarters. They have dark sunken spots. If the disease is noted early, spraying with weak Bordeaux Mixture will prevent it from spreading. Affected pods and leaves should all be removed and burned.

Beet.

Frequently this most useful vegetable or salad is too big and coarse for home purposes, owing to too early sowing or to recent heavy manuring. The soil most suited to Beet is land which has been manured for a previous crop, such as Celery or Onions, as fresh manure causes the roots to become forked or coarse. If the soil is dug up roughly in the early winter, it will be in a nice friable state by the end of April or early in May, which is a suitable time to sow for moderate-sized and tender roots. Make the drills about 1ft. apart and 1in. deep, and level all down evenly when covering the seeds. As the plants appear in the rows, they should be thinned out to about 6in. or 8in. apart, and afterwards kept free from weeds by hoeing. In the autumn, before sharp frost can touch the plants, all the roots should be lifted, taking special care not to injure or break them, otherwise they will "bleed" and be of bad colour when cooked. The tops should not be cut off too closely—1in. from the crown is advisable—and the roots should then be stored away in a frost-proof shed in sand or fine ashes, using as wanted. Cheltenham Green-top and Middleton Park are two of the finest varieties for all purposes. The Perpetual or Spinach Beet is grown for its foliage, which is cooked and eaten the same as Spinach.

One of the Carrion Beetles (*Silpha opaca*) forsakes its ordinary flesh diet, at least in the grub stage, for a vegetarian one—the Beet. The grubs do much damage to the crops at certain seasons. The Beetle itself is nearly 1in. long, flattish, and black ; this is also the colour of the grub, which is Woodlouse-shaped (asiliform). The insects are nocturnal, and must either be hand-picked or treated to a weak solution of Kerosene Emulsion. By way of prevention, animal manures, such as butcher's offal, should be avoided.

Beet Rust (*Uromyces betae*) attacks both Garden and Field Beet, the latter more especially. Usually the disease is not noticed until its third and final stage (teleutospore) is reached, and the blackish spots are in evidence on the leaves. Long ere this the aecidium-stage was passed, probably in Seed-Beet, or even upon the Wild Beet. This was followed by the uredo-stage, when the brown spores were dispersed, increasing the area of the disease. Finally, the teleutospores already alluded to were produced, and these tide the disease over the winter. Sulphide of potassium should be sprayed upon the crop by way of prevention in early summer, and all leaves which decay or are removed from the plants at harvest-time should be burned.

Borecole, or Kale.

For cold or exposed gardens Borecole is indispensable, being remarkably hardy, tender, of good flavour, and affording a supply of vegetables when they are scarcest, viz., from Christmas until late spring. Good, firm soil, that has been deeply worked and liberally manured, whether heavy or light, will grow all the varieties well. In March, when the soil and weather are favourable, the seed may be sown thinly in beds of rich, firm soil, merely covering it to its own thickness and protecting the bed from birds (which are very fond of all *Brassica* seeds) with nets. Immediately the seedlings are large enough to handle, showery weather should be watched for, and the plants then put out $2\frac{1}{2}$ ft. apart each way on ground prepared for them. In the course of a few weeks, they may have soil drawn up to them in the same manner as Potatoes; this will prevent their rocking about by wind, and also, by loosening the surface soil, will ensure their thriving and growing rapidly. If the land is rich and has been deeply worked, the growth of the plants will be so rapid as to meet each other and smother all weeds. The Lapland, Asparagus, and Ragged Jack Kales are all specially hardy varieties, withstanding our severest winters. The Matchless Curled and Dwarf Green Curled are also very hardy and handsomer than the first-named, though no better in quality. Where large quantities of Parsley (or a substitute) are required for garnishing, the Variegated Kale is very serviceable, especially in winter, when Parsley is scarce.

Broccoli.

A deeply-dug and firm, rich soil is essential for the production of this useful winter vegetable. If the soil is very loose the plants make large leaves, wanting in solidity, and when severe weather sets in they collapse and rot. For first supplies to cut, say, from the beginning of October to Christmas, the following in their order of coming into use are varieties of proved merit: Veitch's Self-Protecting Autumn (when true to

name this is a most valuable sort), Walcheren, Early White, and Snow's Winter White. All the above should be sown thinly in rich soil early in April, and planted out from the seed-bed in rows 2ft. apart, with a similar distance between the plants in the rows, arranging them so that each plant comes between two others in the next rows. This is what gardeners term "planting alternately," and an excellent system it is. For later supplies in spring or early summer we can recommend Knight's Protecting, Improved Wilcove, Model, and Late Queen. The last two are very useful to the professional gardener, as they come into use in May and early June, before the Peas and Cauliflowers are ready, and are a great boon in keeping up an unbroken supply of vegetables. The seeds of these later varieties should be sown about the end of April, and the seedlings planted out the same distance apart as mentioned above. On the approach of bad weather, such as much wet, snow, or sharp frost, it is advisable to tie up the leaves over the centre of all plants forming heads, thus throwing off wet or snow, and protecting them from frost, which would otherwise spoil the heads. If there are indications of much and continued frost, it is an excellent plan to take up carefully, with a good ball of soil attached to the roots, all those plants exhibiting signs of forming heads, and to place these close together in pits or frames, or even in sheds from which frost can be excluded. In the hard winters of 1894 and 1895 we did this, and were able to keep up a supply of small, tender Broccoli daily for weeks, while all the other Broccoli outside, except Model and Late Queen varieties, were killed by the severity of the weather. Another plan is to bend on their sides all the plants facing north, before bad weather arrives; but this method is not so safe as that of lifting and storing under cover.

Brussels Sprouts.

This highly productive vegetable is deservedly esteemed everywhere, and to procure large, firm sprouts the seeds should be sown and the plants grown on as advised for Borecole, or Kale. If such varieties as Rosebery or Imported are selected, 2½ft. each way for the plants will be plenty of room; but if extra fine stems, with very large sprouts, are wanted for exhibition, another foot each way should be allowed, choosing Sutton's or Veitch's Exhibition or the new President Carnot, which has proved excellent for exhibitors of late years. One of the greatest mistakes made with Brussels Sprouts is to pick or cut off the top first when commencing to use them. The top ought to be left until last; when taken off first, it causes all or most of the sprouts on the stem to open and start growing, and so become less valuable than they would be if close and firm.

Cabbages.

For convenience of reference this section is treated under three headings—viz., Autumn-sown, Spring-sown, and Red, or Pickling Cabbage.

Taking the *Autumn-sown* first, some judgment must be exercised as to the best time to sow. In the North and in other cold districts the third week in July will be a suitable time; while in the South and warmer parts of the country, from the beginning to the middle of August will be the best time. If sown before, the Cabbages would be apt to mature too early, especially if the autumn and winter proved mild and favourable to growth. The seed may be sown either in beds or in drills thinly, in an open sunny situation; thence the plants should be planted out in rich soil, 18in. apart each way, the position, if possible, being a warm and sheltered one. Drawing the soil up well to the plants when large enough is very beneficial, and to some extent acts as a gentle protector to their bases. In the spring—say about March—an application of 1oz. of nitrate of soda to each square yard will hasten development considerably; in fact, that fertiliser is of great assistance to all this family when the plants are in active growth. Earliest of All, Mein's No. 1, and Ellam's Dwarf Spring, are most reliable varieties for sowing in the autumn.

Spring-sown. In some establishments Cabbages are required during the summer and autumn months. Where this is the case, a first sowing should be made about the middle of March of such varieties as Earliest of All and Improved Nonpareil, followed a month later by Christmas Drumhead or London Market. All these varieties should be treated as recommended for the autumn-sown Cabbage, except that the last two should have a little more room between the plants. If only one variety is desired, Christmas Drumhead should have the choice, being a most useful and fine-flavoured variety, and of good constitution.

Red, or Pickling. The Red Dutch Pickling is probably the best and richest-coloured variety of this class. It should be sown and planted out as advised for autumn-sown Cabbage, the only difference being that the plants should have twice the distance between them when planted out—i.e., 3ft.

Savoy. See page 404.

The Large White Butterfly (*Pieris brassicæ*), or, rather, its larva (Fig. 229), is one of the worst pests of the Cabbage—indeed, of the entire *Brassica* family. The butterfly itself is too well known to need description, while its bluish-green caterpillar should be almost equally familiar. The pupa-stage is passed either on or very near its food-plant, such as under walls, eaves of outhouses, palings, and the like. It is of the shape shown in the illustration. The insect is double-brooded, appearing first

in late spring and again in July. Lime and soot, in the proportion of three parts of the former to one of the latter, should be distributed over the patches in June.

Hand-picking should also be resorted to, while all pupæ and perfect insects should be destroyed. Ichneumoned larvæ should never be interfered with; they are readily told by the groups of yellowish-white cocoons surrounding the unfortunate host. Two other species of *Pieris* are also troublesome—the Small White and the Green-Veined White.

Another lepidopterous pest is the Cabbage Moth (*Mamestra brassicae*) Caterpillar, which eats into the hearts of Cabbages in summer, rendering them disgusting. Hand-picking is the only remedy. The Cabbage Fly (*Anthomyia brassicæ*) and the Cabbage Aphis (*Aphis brassicæ*) are also troublesome. The grub

of the former penetrates the stem if not prevented by liberal dressings of soot and lime; and the latter infests the under-surfaces of the foliage, from which they should be washed with a soft soap solution. Then there is the Snowy Fly (*Aleyrodes proletella*), which also infests the under-surfaces of the leaves. These insects are very minute and have powdery wings. They should be treated to a soft soap solution, or in very bad cases the infested leaves should be removed and burnt. At the roots there are Wireworm (larvæ of certain Click Beetles) and the Cabbage and Turnip Gall Weevil (*Ceuthorrhynchus sulcicollis*), whose yellowish footless grubs set up irritation in the roots, causing them to "gall" and eventually to rot. Gas-lime at the rate of one ton per acre should be applied to destroy the pests left in the soil after the crop has been lifted, and the ground then allowed to remain fallow for a time. Neither Cabbages nor Turnips should be grown the following season, and any cruciferous weeds should be promptly eradicated.

Galls of another kind on the roots are due to the presence of one of the Slime Fungi (*Plasmodiophora brassicæ*), giving rise to the disease known as Finger and Toe, Anbury, &c. Quicklime is the remedy, and should be applied at the rate of thirty bushels to the acre. The disease is readily spread by workmen carrying the soil from an infected into a non-infected area either on their boots or on the wheels of farm-carts.

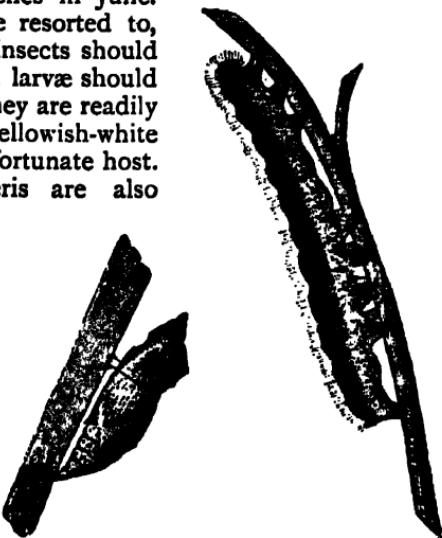


FIG. 229.—PUPA AND LARVA OF
PIERIS BRASSICÆ.

Anbury does not confine its attention to Cabbage, but attacks other well-known vegetables, including Turnips and Radishes. All cruciferous weeds should be burnt, as should all infected Cabbage-stumps.

Capsicums and Chillies.

In some few gardens these are grown for exhibiting in collections of vegetables, or for use in the house. If for the former purpose, Bull's Nose or Elephant's Trunk are the best; if for home use or ornament, Prince of Wales, Celestial Pepper, and Little Gem are beautiful varieties. The seed should be sown in March in gentle heat, and the seedlings, when large enough to handle, should be potted singly in small pots, using a compost of fibrous loam, with a little decayed leaf-mould and silver-sand added, keeping the plants in a light position and preventing insect pests by fumigating. As the pots become filled with roots the plants should be shifted into larger pots, using a rich and fibrous compost, and always draining the pots well. Towards the end of May the plants will thrive very well in a cold frame, syringing them well in the afternoon and closing with a nice sun-heat. When they are in 6in. or 7in. pots, they will not require potting again, but may be fed liberally with diluted liquid manure two or three times weekly.

Carrots.

By means of a hot-bed made up of stable litter trodden firmly, the litter covered with 4in. or 5in. of fine soil, and a frame placed over, fine early Carrots may be quickly obtained. Sow in January French Horn, or Early Scarlet Nantes Horn, over the bed, and cover very lightly with soil. In a few days the seeds will germinate, and air must be carefully admitted on all favourable occasions. The same varieties may be sown outside in the middle of February on a warm and sheltered border in drills 1ft. apart. As these Carrots are drawn while small for flavouring, &c., no other thinning of the plants is necessary. The ground for the main crop should have been well manured for a former crop, and deeply dug during the winter. Before levelling down at the end of March or early in April, a dressing of ashes from a burnt rubbish-heap, or a light application of soot, spread over the ground, is an advantage. In the process of levelling and preparing the soil, this dressing becomes thoroughly incorporated, and makes the soil better for germination. The drills may be drawn 1ft. apart and 1in. deep; in these the seeds should be sown thinly, and lightly covered with soil. New Intermediate and Red Elephant are good varieties. In showery weather the seedlings should be thinned out to 6in. apart, and when Carrots are wanted every alternate one may be

drawn. In the autumn the roots should be carefully lifted and stored away as advised for Beet.

By far the most destructive of Carrot pests is the Carrot Fly (*Psila rosea*), whose larvæ penetrate the roots, causing them to decay, and rendering them unfit for market by reason of their rust-spotted appearance. The eggs are laid in early summer beneath the soil, and the resulting larvæ are yellowish-white footless grubs about $\frac{1}{4}$ in. long. They tunnel the Carrots in an upward direction, and make in the process several exit-holes. Carrots whose foliage turns yellowish-brown and withers should be lifted, and if the grubs are noted all such sickly roots should be removed and burned. Kerosene emulsion might be sprayed upon the plants in



FIG. 230.—CARROT-FLY: 1, PERFECT INSECT; 2, GRUB; 3, PUPA;
ALL SHOWN NAT. SIZE AS WELL AS MUCH MAGNIFIED; AND 4,
“RUSTY” CARROT.

(By permission of the Board of Agriculture.)

May with a view to prevent egg-laying. Parsnips are also attacked. There are several broods. Soot and lime top-dressings are also beneficial. Fig. 230 shows the perfect insect, grub, and pupa, natural size and magnified, together with a Carrot exhibiting the characteristic rusty spots.

Cauliflowers.

In most large gardens Early London or Dwarf Erfurt is sown in cold frames about the middle of August for the production of early Cauliflowers the following year. Another excellent variety for autumn sowing is Autumn Giant. No coddling should be given to the plants; they should be kept

as hardy and sturdy as possible by removing the lights daily, except when there is much wet, snow, or severe frost. By the end of March they may be transferred to rich soil on a warm border, planting the two first-named 20in. apart each way. The plants of the Autumn Giant variety will be best in a more open quarter of the garden, arranged 2ft. apart each way. The two early varieties first-named should be ready to cut early in June, and the last-named will form a valuable succession for a month or more; in fact, if the first spring-sown plants fail, as they often do, the Autumn Giants are doubly valuable in keeping up an unbroken supply.

Early in February a small sowing should be made in gentle heat of Extra Early Forcing, and as the seedlings become large enough, they should be pricked out in a frame or boxes, afterwards transplanting to good soil, in a warm position, 18in. or 20in. apart. About the middle of March, Early London, Eclipse, and Autumn Giant should be sown in beds of fine rich soil, avoiding overcrowding in the seed-bed; and when the plants are large enough they should be planted out 2ft. apart each way, in good, deeply-worked, and heavily-manured soil. As they get established and attain a height of 8in. or so, soil should be drawn up to them on each side of the row. Later on, if extra close and large heads are wanted for exhibition or other purposes, liquid manure, or 1oz. of nitrate of soda per square yard, will impart vigour to the plants, and act beneficially on the heads. Whether required for exhibition or not, it is always advisable to tie up the leaves over the heads when forming, or to break a few of the outer leaves over the heart of the plant: this gives the heads that beautiful white appearance so much admired in well-grown Cauliflowers. After the head has been cut, the plants should be promptly pulled up, as they then only drag the fertility out of the soil to no purpose. It may be remarked that Slugs are very fond of Cauliflowers when first planted out; therefore air-slaked lime or soot should surround them for protection until all danger is past.

Celery.

Except for very early requirements the white varieties of Celery are not to be compared with the pink or the red forms; but where very early Celery must be grown, Incomparable Dwarf White is one of the best, being thick, crisp, and of good flavour. Leicester Red, Wright's Grove Red, and Wright's Grove Pink are all first-class for main or late crops. For first crops seed should be sown thinly in boxes in gentle heat in February, and for main or late crops about the middle of March. When the seed has germinated freely, the plants should be well exposed to the light to prevent their becoming drawn or leggy; and when 1in. or so high, they should be pricked out in boxes or

in frames, with a gentle heat, gradually hardening them off ready to plant out in trenches when they are about 6in. high. The trenches are usually 18in. deep, the same in width, and 4ft. apart; at the bottom of the trench should be placed 6in. of good well-rotted manure, covering this with 2in. of soil. In these the Celery should be planted in two lines, the plants being about 1ft. apart and arranged alternately, thus giving them more room for development than if directly opposite each other in the rows. Showery or dull weather is best for planting out, and at no time—from the period of sowing onwards—should Celery suffer for want of water. If it does, the plants are liable to "bolt," or run to seed, and thus prove worthless. When once well established in the trenches, diluted liquid manure, kainit, or agricultural salt, at the rate of 2oz. to the yard run of trench, will be beneficial, as Celery is a gross feeder.

A mistake is often made in earthing up too soon, and also by carelessness in the operation. Before earthing all suckers should be removed, and all the leaves of the plant tied up together with a piece of matting or raffia; then the earth should be placed carefully round the plants, but not in sufficient quantities to smother the centre or growth part. Usually, about three such earthings are sufficient, but the final earthing should be brought close up to the points of the plants, as the object is to throw all the water from the plants and prevent rotting. Many successful exhibitors tie up the plants in layers of stout brown paper, instead of earthing; the Celery is thus beautifully clean and well blanched.

A leaf-mining insect, the grub of the Celery Fly (*Tephritis onopordinis*), attacks the foliage of both Celery and Parsnips. Its attack is denoted by a sickly appearance of the leaves and the presence of yellowish patches. The best remedy is to crush the grubs between the finger and thumb before they can escape from the leaves and pupate. There are two or three broods in a season. In very bad cases the leaves had better be removed and burned. This is also known as Parsnip Fly.

Very destructive also is the Celery Stem Fly (*Piophila apti*). The larva of this insect bores into the stem above the earthing-line, and works towards the centre as well as to the base. Its galleries are frequently disclosed when the vegetable is being prepared for table. The fly is very minute ($\frac{1}{4}$ in. in wing-expanses) and inconspicuous. The larva is creamy-white and shiny, with two dark spiracles at the hinder extremity. There are several broods, and the larval and pupal states may be passed in either the Celery stems or the earth. The pests are difficult to deal with; but their attacks may be minimised by syringing or spraying Anti-Pest on the stems to render them disagreeable to any larvæ hatched out. Where Celery is seen to be attacked the plants should be lifted and burned, and after the crop has

been raised the quarters should be dressed with gas-lime, left for a time, and then forked in. Celery badly attacked practically rots away.

Chicory.

In many gardens Chicory is much appreciated as a salading during the winter months, especially if quickly and properly grown. The seed should be sown at the end of May or in June, in drills 1 ft. apart, in a sunny, open position. When the seedlings are large enough to handle, they should be thinned out to 8 in. apart in the rows, and afterwards kept free from weeds with a Dutch hoe. At the end of October or early in November, the roots may be taken up carefully, and stored in soil in sheds or in the open ground, protecting from frost with litter. By placing a quantity of the roots in a Mushroom-house or other dark, warm structure at intervals of three weeks, a daily supply of tender and beautifully-blanced leaves for salad may be picked.

Cucumbers.

Very fair crops of Cucumbers are grown in frames placed on hot-beds made of stable litter trodden firm, and several inches of good soil arranged thereon. It is seldom wise to make up a hot-bed before the end of March or early in April. If snow falls in quantity it seems to take the heat out of the bed, and all the plants in the frame are killed or seriously crippled. About three seeds may be sown in the centre of each light, pulling one plant out if they all germinate, keeping a moist growing atmosphere, and always closing the frame with a good sun-heat and plenty of moisture early in the afternoon. Insect pests will not be troublesome if this is followed out.



FIG. 231.—CURLED-LEAVED
ENDIVE.

Endive.

Endive is seldom in great demand until the supply of Lettuce is exhausted, and, like Chicory, it is most useful for winter salading. If very early Endive is required, viz., in the autumn, seed may be sown in May thinly in drills 1 ft. apart, in rich, porous soil, and the plants afterwards thinned out to 1 ft. apart in the rows. For main crops or

winter supplies, the middle of July is a suitable time to sow, thinning out the young plants as stated above, and encouraging rapid growth by frequent moving of the surface-soil and an occasional soaking with weak liquid manure. Various systems

in frames, with a gentle heat, gradually hardening them off ready to plant out in trenches when they are about 6in. high. The trenches are usually 18in. deep, the same in width, and 4ft. apart; at the bottom of the trench should be placed 6in. of good well-rotted manure, covering this with 2in. of soil. In these the Celery should be planted in two lines, the plants being about 1ft. apart and arranged alternately, thus giving them more room for development than if directly opposite each other in the rows. Showery or dull weather is best for planting out, and at no time—from the period of sowing onwards—should Celery suffer for want of water. If it does, the plants are liable to "bolt," or run to seed, and thus prove worthless. When once well established in the trenches, diluted liquid manure, kainit, or agricultural salt, at the rate of 2oz. to the yard run of trench, will be beneficial, as Celery is a gross feeder.

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Very destructive also is the Celery Stem Fly (*Piophila api*). The larva of this insect bores into the stem above the earthing-line, and works towards the centre as well as to the base. Its galleries are frequently disclosed when the vegetable is being prepared for table. The fly is very minute (1in. in wing-expans) and inconspicuous. The larva is creamy-white and shiny, with two dark spiracles at the hinder extremity. There are several broods, and the larval and pupal states may be passed in either the Celery stems or the earth. The pests are difficult to deal with; but their attacks may be minimised by syringing or spraying Anti-Pest on the stems to render them disagreeable to any larvæ hatched out. Where Celery is seen to be attacked the plants should be lifted and burned, and after the crop has

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winter supplies, the middle of July is a suitable time to sow, thinning out the young plants as stated above, and encouraging rapid growth by frequent moving of the surface-soil and an occasional soaking with weak liquid manure. Various systems

of blanching Endive are adopted. One of the most primitive is to place an inverted flower-pot over the plant, plugging up the drainage hole to exclude light. Another is to place two boards together like an inverted V over the rows of plants. But where there is a Mushroom-house that can be utilised, it is far the best plan to take up the plants with a good ball of soil attached and place them close together, taking care not to give too much water, or the foliage will rot.

In this way white and tender Endive is obtained. Successional batches may be placed in the Mushroom-house as often and in such quantities as may be necessary for requirements. The difference between the Curled- and Broad-leaved varieties is shown in Figs. 231 and 232. Extra Green Curled and Improved Round-leaved Batavian are the best varieties.

Herbs.

No vegetable garden is complete without its herb-bed, and as nearly all kinds may be easily raised from seed there is no difficulty in getting together a collection. The situation should be open, well-drained, and easy of access, so that the herbs may be got at without trampling over the beds. Early in April is a good time to sow, taking care to have the soil fine and in good working order. The distances between the drills for each kind will be determined by the height of the plants; for instance, Angelica should be in rows 6ft. apart, Fennel 3ft., and Marjoram 18in. As the seedlings appear, overcrowding should be guarded against by freely thinning. Nothing is gained—indeed, very much is lost—by congestion, not only in the case of herbs, but also with other plants in the garden.

Horse-Radish.

To grow this well the ground should be trenched 2ft. deep, and a good dressing of farmyard manure placed at the bottom of the trench; this will draw the roots straight down without forking. Pieces of root with a crown, or bud, at the top may be inserted a few inches from the surface and about 1ft. apart; in a year very fine, thick, straight stems will be ready for use.

Kale. See "Borecole."

Leeks.

The Leek is so hardy and useful as a winter vegetable that we are surprised it is not more frequently grown. At present



FIG. 232.—BROAD-LEAVED ENDIVE.

its culture is only given the proper attention by exhibitors, as fine, well-grown, and nicely blanched Leeks are always a telling dish in a collection of vegetables. To procure the magnificent specimens seen at horticultural exhibitions the seed should be sown early in January, in boxes, in gentle heat. The seedlings should be transferred into small pots when large enough, and planted out afterwards the same as recommended for Celery, adopting the same mode of blanching the growth, and giving copious supplies of diluted liquid manure when the plants are growing freely. For ordinary crops this seed may be sown in drills early in March, and when the plants are about 6in. or 7in. long they should be planted out in deeply-worked rich soil, using a dibber to make a good deep hole; at the bottom of the hole the plant should be placed with a little soil to cover the roots. As the plant grows, the hole should be gradually filled up with soil, thus giving a much greater length of blanched stem than is possible from plants put in on the level or surface. Dobbie's Champion and the old Musselburgh are two excellent and reliable varieties.

• Lettuce.

Tastes differ as to which are the better Lettuce—Cos or Cabbage; but as a rule it is wise to grow some of both, sowing first a little seed of Early Paris Market (Cabbage) and Paris Green (Cos) in January, in gentle heat, pricking out the seedlings into boxes, and gradually hardening off to plant out in a warm, sheltered border early in April. In the middle of March a small bed may be sown, and as the plants get large enough they should be planted out 1ft. apart in rich soil. This operation of sowing and planting, if repeated every three weeks to the end of May, will keep up a constant succession of tender, crisp Lettuce. From the end of May to the end of July the seed should be sown thinly in drills, and the plants thinned out, not transplanted. If disturbed at the roots they are very liable to bolt or to run to seed without hearting. Plenty of moisture at the roots is essential to Lettuce in dry weather: the hearts are then large, solid, and very crisp. Paris Green and Paris White are splendid Cos varieties, while Continuity and Perfect Gem are equally good Cabbage sorts. Hicks' Hardy Winter Cos and All The Year Round Cabbage are two meritorious varieties for sowing in August to stand the winter, and for early spring cutting.

Several moth-caterpillars feed upon Lettuce, the most conspicuous being those of the Common Tiger Moth. These hairy caterpillars are taken by but very few birds, the Cuckoo being the greatest friend to the gardener in getting rid of them. Hand-picking must be resorted to. Surface Caterpillars are also troublesome. These must be dealt with by hand-picking.

A Mildew asserts itself upon the leaves of Lettuce, both forced and grown outside, though chiefly upon the former. It is a species of *Peronospora* and causes the plant to turn sickly and die. A well-ventilated house and a not too moist atmosphere will tend to keep it at bay.

Mushrooms.

These delicious vegetables, or fungi, are always appreciated, and when manure from horses fed on dry food can be obtained in quantity there is little trouble in growing Mushrooms all the year round. Manure from horses fed on roots, or receiving medicine, is of no use, Mushrooms absolutely refusing to grow in such droppings. It should be collected every morning, or oftener, and placed about 1ft. deep on the floor of an open shed, free from drip or wet, turning the droppings every morning, and working out all the long straw. This process of turning should be repeated daily, until there is sufficient manure to make a bed

—large or small, according to requirements ; then the whole should be thrown into a heap to heat thoroughly, and to eradicate any rankness. The heap ought to be turned thoroughly and well mixed daily for a few days or a week ; it will then be in good condition to make up into a bed, say, 1ft. deep,

which should be beaten firm. This bed will generate considerable heat, but when the heat has fallen to 75deg. or 80deg. it will be ready for spawning.

The spawn should be broken up into pieces about the size of a hen's egg, and inserted 2in. deep and about 1ft. apart over the whole of the bed, making the droppings firm again over the spawn. A coating of good fibrous loam 2in. deep, spread evenly over the bed and gently pressed with the back of a spade, will complete operations, taking care that the soil is neither too wet nor too dry, as no watering of the bed—unless it becomes very dry—should be done until the Mushrooms appear, which usually



FIG. 233.—MUSHROOMS GROWN IN PANS.

occurs in six weeks from the time of spawning. A temperature of 55deg. is the most suitable, and ought not to be much exceeded. Maintain a moist atmosphere in the structure by damping the floors and walls—not the beds—every morning. When the Mushrooms appear, a good soaking with slightly-warmed water may be given, and as often afterwards as may seem necessary, giving weak liquid-manure, or a handful of salt in a 4gal. can of water when the bed exhibits signs of exhaustion.

When gathering the Mushrooms it is advisable to twist the stems round gently to detach them from the bed, filling the hole made in the bed with a little soil. If the stems are cut and left in the bed they cause the spawn to decay.

Very good Mushrooms are often grown in pasture fields by inserting lumps of spawn under the turf at the end of April or early in May, and beating the turf firm over the spawn; in favourable seasons, and on suitable land, the crop is often enormous. Mushrooms may also be grown in pans (Fig. 233).

Woodlice are the chief pests of the Mushroom cultivator, and they are best trapped by half-filling pots with hay and laying them on their sides. Each morning the Woodlice should be shaken out into a vessel of boiling water.

Mustard and Cress.

Mustard and Cress are usually employed together, and as their culture is exactly the same they are sown side by side. With a little gentle heat there is no difficulty in having a daily supply all the winter. Simply fill a few boxes with light, rich soil, press level the surface with a piece of board, and sow the seed on the surface, watering well, and not permitting the soil to become dry. By sowing one box of Mustard and another of Cress every three or four days a constant daily supply for a small family is secured. From the beginning of April to the end of September seed sown in the open ground will do very well.

Onions.

The ground for this crop should be deeply trenched and liberally manured in the autumn, leaving the surface as rough as possible, to be fully acted upon by the weather. In the early part of March a good sprinkling of soot or ashes from burnt refuse is beneficial, as either of these become well incorporated with the soil when levelling for sowing, which should be done as early in the month as the soil and weather will allow. For main crops the drills should be 1ft. apart, and not more than 1in. deep, sowing thinly the seed of such varieties as Ailsa Craig, Cranston's Excelsior, Bedfordshire Champion, and Carter's Record. When the seedlings have attained a height of

about 3in. they may be thinned out to 6in. apart in the rows, unless wanted for pickling, when they should be sown a month later than mentioned above, and will need no thinning. If required for exhibition, it is necessary to sow the seed in heat early in January, and to transfer the seedlings when large enough into small pots, afterwards gradually hardening off, planting out 1ft. apart each way early in April, and feeding weekly with diluted liquid manure or 1oz. of nitrate of soda to each square yard; failing these some of the prepared artificial manures are valuable, but must not be allowed to fall on the foliage.

In the autumn, when growth has ceased, the bulbs should all be lifted carefully and exposed to the sun and wind for a week or so; they will then be ready to store away thinly in a cool, dry, frost-proof structure.

All the Tripoli section, and most of those varieties usually sown in spring, will succeed very well if sown in drills as advised above early in August, and the following March planted out in good deep rich soil 1ft. apart. Where the Onion Fly (Fig. 234) is very troublesome it is an excellent plan to sow in the autumn, as the pest very seldom troubles them, and such varieties as Ailsa Craig, James's Keeping (Fig. 235), and other sorts usually sown in spring, will produce large sound bulbs that will keep equally as long as spring-sown Onions. See also Shallots, page 405.

Onion Mildew (*Peronospora Schleideni*) is a most debilitating disease. The fungus attacks the leaves, causing them to assume an unhealthy yellow appearance, and ultimately to die. If the leaves attacked are burned at once, and the other plants sprayed with liver of sulphur, the disease will be stayed; but if they are allowed to remain in the soil, spores will be distributed, increasing the gardener's trouble, as eventually winter spores will be developed.

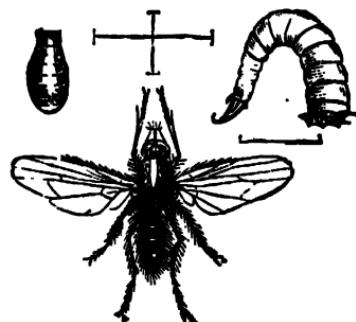


FIG. 234.—ONION FLY, LARVA, AND PUPA.

sun and wind for a week or so; they will then be ready to store away thinly in a cool, dry, frost-proof structure.

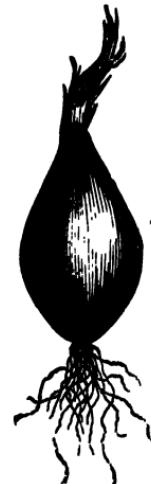


FIG. 235.—ONION JAMES'S KEEPING.

Parsley.

In every garden this plant is indispensable, and to have a constant supply seed ought to be sown in March, and again

in June, thus ensuring both summer and winter supplies. The soil should be deeply worked and well manured some time prior to sowing, as Parsley always pays well for good culture. The drills may be drawn 1 ft. apart, and not more than 1 in. deep. The seeds should be sown thinly, and immediately the plants are large enough to handle they should be thinned out to 1 ft. apart: this will appear a waste of space at the time of thinning, but the result will be proof to the contrary. In the great majority of gardens the plants are insufficiently thinned, and stifle each other. The Moss-Curled variety is one of the best for all requirements.

Parsnips.

The culture already advised for Beet and Carrots will also be suitable for Parsnips, viz., using deeply-worked soil that has been well manured for a previous crop. For general crops the seed should be sown at the end of February or early in March very thinly in drills 15 in. apart, afterwards thinning the plants to 1 ft. apart in the rows. As the Parsnip is a strong and rapid grower, no weeding will be necessary after the plants are thinned, if all weeds are pulled at that time. Unlike most root crops, the Parsnip is best taken up as wanted, and should not be lifted and stored in sheds or clamps. If a covering of straw or bracken is put over the bed before severe frost sets in, there will be no difficulty in digging up the roots at any time during the winter; the flavour will also be sweeter and far superior to roots which have been lifted in the autumn.

To obtain the long shapely roots seen at exhibitions, instead of sowing the seed in drills a crowbar is employed to make deep holes 18 in. apart each way, working the bar about a little to enlarge the cavities, which are then filled with sand or sifted ashes from a burnt refuse-heap. Two or three seeds are placed on the top of this material, and if all germinate the strongest and most central one is left, and the others are pulled. In this way long, straight, handsome roots are obtained. For exhibition purposes few, if any, varieties will equal Dobbie's Selected, as it combines length and thickness with colour and fine form. For main or general crops, The Student and Elcombe's Improved are two fine varieties of excellent flavour.

Peas.

An open sunny position and soil that has been deeply trenched and well manured the previous autumn are best suited for this esteemed vegetable. Very little is gained by sowing seed in November, or by sowing in January in heat, and transplanting out in March. A few days may be gained in picking the pods, as compared with those sown outside, but these coddled plants are seldom very productive; one or two gatherings are

ecured, and then the plants are useless. For all ordinary purposes seeds should be sown as early in February as the weather will permit, selecting for the first crop William Hurst or Chelsea Gem, neither of which usually exceeds 18in. in height. They may be sown in rows that distance apart, taking care to protect the young plants from sparrows as they appear, and placing a few short sticks to them early, which will afford some little shelter from cold winds. Towards the end of February another sowing should be made of any of the following varieties: Gradus, Stratagem, Sutton's Early Giant (Fig. 236), and Exonian, all of which are excellent. The seed should not be sown quite so thickly as is frequently done, and should be in rows about 3ft. apart. From this period onwards it is advisable to make fresh sowings immediately the previous sowing pushes through the soil, repeating up to the end of May or early June. The following varieties are about 3ft. high, and great bearers of fine handsome pods, first-rate for the dining or exhibition tables; the seed should be sown thinly in drills 5ft. apart: The Gladstone, Veitch's Perfection, Captain Cuttle, and Boston Unrivalled. For the last sowings, elect Ne Plus Ultra or Carter's New Michaelmas; the first of these ought to be at least 6ft. from any other rows of Peas, as it is a tall, strong-growing variety. It is an excellent plan to place a mulch of strawy manure on either side of the rows of Peas immediately after staking; this keeps the soil cool and moist, and causes the plants to remain vigorous and healthy, producing extra fine and well-filled pods. With the exception of the first two varieties named, all the others mentioned are suitable for exhibition, and, where this is an object, the seeds should be very thin in the rows, say 6in. apart, to allow the plants to grow up sturdy and branching, with correspondingly large and firm pods.

So numerous are the enemies to Peas that to describe them would need a page or two. Chief offenders, however, are the pea Weevil (*Sitona lineatus*), a beetle about 5mm. in length, and greyish, with yellow stripes. This feeds upon the young foliage; while the grubs, which appear later, attack the roots. Dry weather



FIG. 236.—SUTTON'S EARLY GIANT PEA.

is favourable to the increase of these insects. Dustings of soot when the plants are wet tends to prevent an attack; while every effort should be made to keep the crop growing. Another Pea Beetle, *Bruchus pisi*, attacks the seeds. It is about the size of the Weevil already noted, but black in colour. Much might be done by way of prevention if all seed showing evidence of being "wormed" were kept in hot water at 125deg. Fahr. for an hour or more. Then there is also the objectionable Pea Moth (*Grapholitha nebritana*), whose pale green larvae are frequently served up with the Peas, and thus vast numbers are destroyed. Little can be done to prevent attack. Thrips, Aphides, Wireworm, Slugs, and Cabbage Moth Caterpillars are all troublesome. The first two may be kept at bay by means of hot water; the Slugs and Wireworms must be trapped; and the caterpillars will have to be hand-picked.

Potatoes.

Few vegetables are of such an accommodating nature as regards soil, situation, &c., as the Potato, and for that reason it does not always receive the attention it deserves. Although most soils will grow the tubers more or less well, yet a fine, deeply-worked soil, that has been well manured for a previous crop and dug or ploughed up roughly in the winter, is the best for the production of Potatoes of medium size, good form, and that will cook well when tested (it must

be acknowledged that really first-class Potatoes are too often spoiled by cooks). For first supplies Har-binger, Ring-leader (Fig. 237), and Improved Ash-leaf Kidney are second to none for quality, cropping, or earliness; they should be planted on a

FIG. 237.—RINGLEADER POTATO.

warm border about the middle of March in rows 20in. apart and 1ft. between the tubers in the rows, drawing soil up to the tops when large enough. On light land Early Puritan and Beauty of Hebron are two early, heavy-cropping sorts, but, as a rule, are more suited for market than for the table. For mid-season requirements Sutton's Satisfaction and Sutton's Windsor Castle are splendid varieties; the tubers are of good size, very handsome, with prominent eyes, abundant croppers, of extra good

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quality, and adapted for home, market, or exhibition purposes. For latest supplies Up-to-Date, Challenger, and The Bruce are all excellent, and, having full eyes, there is little waste in peeling. In the case of all the mid-season or late varieties there should be at least $2\frac{1}{2}$ ft. between the rows, and 15 in. between the tubers in the rows, and they should be planted as early in March as the weather and soil will permit. A great mistake is made in planting late Potatoes at the end of April or in May; not only is the quality impaired, but the crop is lighter, and is more subject to disease than are those planted in March. Immediately the tops are through the soil it is advisable to hoe between the rows and to give an application of 3cwt. of superphosphate and 2cwt. of kainit per acre. After this rapid progress in growth will be made, and the rows should be "earthed up" as soon as the tops are sufficiently high. Beyond pulling out weeds no further attention will be necessary until the tops decay, then the crop should be lifted, the tubers sorted into two sizes (viz., those for cooking and those for seed), and stored, if possible, in sheds, protecting them from frost by straw, and taking care to reject all diseased tubers, as these would spread the rot into others.

Of Potato pests, there is none so destructive as the fungus *Phytophthora infestans*, though even this is not so common as it was before the days of high (protective) moulding, the use of disease-resisting varieties, and spraying with the Bordeaux Mixture. The first indication to the gardener of the dreaded disease are the brownish spots upon the foliage (Fig. 238). The disease spreads with remarkable rapidity; hence the necessity for prompt measures—the rooting up and burning of infected plants and the spraying of the remainder. In gardens the spraying with Bordeaux Mixture or similar fungicide might be oftener adopted as a preventive measure. We should then hear less of such diseases as *Phytophthora infestans* and Leaf Curl (*Macrosporium solani*).

Of insects that may fairly be regarded as pests are the Wire-worms, Leather-Jackets, and some of the Surface Caterpillars. Wireworms are difficult to treat successfully, but dressings of soot



FIG. 238.—*PHYTOPHTHORA INFESTANS*.

and lime pointed in render the ground distasteful. Leather-Jackets are best left to the Starlings and other insectivorous birds.

Radishes.

Very early Radishes are obtained by sowing seed on a gentle hot-bed early in January, keeping the frame closed until the seed has germinated, and then admitting air with judgment on all favourable occasions, so, as not to get the plants unduly drawn. The seed should not be sown too thickly for the same reason, otherwise the plants will be more conspicuous for their foliage than for their roots. From the middle of March sowings may be made every fortnight onwards, using very little seed each time, and protecting the same from birds, which are very partial to them. Rich soil and a nice, open sunny position are suitable for this salad, and the quicker the Radishes can be grown, the better and tenderer they are. Vilmorin and Co., Paris, have introduced a fine strain for frames; one of these is named Leafless, and, though it has very small foliage, it may be sown thickly and is very good. The same firm's Extra Early Forcing is also an acquisition. Other good varieties for frames or outside are French Breakfast, Long Scarlet, or the Turnip Radishes.

Rhubarb.

Owing to the untidy appearance presented by the foliage of Rhubarb during some portions of the year, it should be grown in a part of the garden where it will not be an eyesore but will yet be fully exposed to sun and light. In preparing a site for a new plantation the ground should be dug to a depth of 3ft., and heavily manured during the winter. Planting should be done at the end of February or early in March, allowing a distance of 4ft. between each stool, and giving a mulch of strawy manure immediately afterwards to conserve moisture. Rhubarb may also be raised from seed sown early in March, thinning out the plants to the distance named above. These seedlings will make good plants for forcing in two years. By taking up roots, or clumps, in November with a good ball of earth attached, and placing them in a Mushroom-house or other warm, dark, moist structure, a plentiful supply of tender "sticks," or more properly, "stems," will be produced for Christmas and the New Year. Champagne, Monarch, and Victoria are three favourite varieties that succeed on all soils.

Salsify and Scorzonera.

As the culture of both the above is similar, they are dealt with together, and in many establishments they are used together. The seed is best sown early in April in drills 15in. apart, on soil that has been deeply worked and well manured

for a previous crop. Thin out the plants to about 8in. apart in the rows, and protect and dig up as required for use, the same as recommended under Parsnips.

Savoyes.

Very frequently this winter vegetable is sown too early; the consequence is that it is ready to cut in the early autumn, and the heads burst before they are wanted. For all general purposes, the first week in April is quite early enough, selecting an open situation for the bed and not sowing the seed very thickly. When the plants are large enough, they should be put out in good deeply dug soil, at 20in. apart for the large-growing varieties, and 15in. for the small-growing ones, if possible choosing showery weather, and protecting from Slugs by a circle of soot or air-slaked lime. When the plants have commenced to grow again freely, they will be all the better for being "earthed up," *i.e.*, having the soil drawn up to them on each side of the rows. If at any time during the summer the Savoys appear to cease growing, or to be turning a yellowish hue, an application of 1oz. of nitrate of soda to each square yard will impart new vigour. The flavour of Savoys is much improved by frost. Early Dwarf Ulm and King Coffee are two fine little Savoys, fit for a gentleman's table; for the servants' hall or for market the larger Drumhead or Dwarf Green Curled is most suitable.

Seakale.

This vegetable (Fig. 239) is practically indispensable in most gardens of any size, and a good supply of crowns for forcing is imperative. Seed sown thinly in rows 2ft. apart at the end of March will produce large crowns in two years, if the soil is good and the plants are thinned out to 15in. apart in the rows. By sowing annually a constant demand may be met without much trouble. In November the oldest plants may be lifted, sorting out all the strongest crowns or roots, and laying them in soil until wanted. These crowns should be placed in a Mushroom-house, or other dark place, every fortnight, in quantities according to requirements, the roots being plunged in soil up to the crown, and kept moist, also maintaining a moist atmosphere. The crowns will soon form nice heads beautifully blanched. If the first batch is planted in November, and this is



FIG. 239.—SEAKALE.

followed by other batches every fortnight to the middle of March, a constant supply of Seakale will be produced from Christmas to the end of April. The temperature advised for Mushrooms is also suitable for forcing Seakale.

Shallots.

Shallots are by many preferred to Onions, not only for culinary uses, but also for pickling, the contention being that they are milder in flavour. Any fairly good rich soil will grow this vegetable admirably. The bulbs should be planted singly 1ft. apart, and buried up to the neck; if the roots push the bulbs out of the soil, as they sometimes will, they ought to be pressed back again. Weeds, if troublesome, may be hand-pulled, or kept under by the Dutch hoe. In the autumn, when the tops decay, the bulbs should be lifted, allowed to dry thoroughly in the sun for ten days or so, and then stored away the same as Onions. Probably the best Shallot is Veitch's Exhibition Purple; it is large, firm, and handsome.

Spinach.

A moderately-deep, rich, friable soil is most suitable for this crop, which is always welcome, as it comes into use at a period when vegetables are none too plentiful. The first sowing may be made in February on a warm border in drills 1ft. apart, afterwards thinning the seedlings to 6in. apart; unless thinned, the plants crowd each other, and the foliage is much smaller than it otherwise would be. Later sowings may with advantage be made between rows of Peas, sowing both at the same time—one row of Spinach between two rows of Peas. In this way space in the garden is economised, and the Spinach crop is exhausted, and may be cleared away before it runs to seed and interferes with the Pea crop. It is little use sowing Spinach for summer supplies after the middle of May, as the hot, dry weather causes the seedling plants to rush to seed without making leaves large enough to pick. Early in August a portion of the garden that has been cleared of its crop, and is still in a fairly rich condition, may be levelled, and sown with Spinach in drills 1ft. apart; this will afford frequent gatherings during the winter and spring. For sowing in either spring or autumn the Victoria or Long-standing variety is the best, being equally capable of withstanding hot or cold weather.

Tomatoes.

For outside culture the seed should be sown early in March and grown on. By the end of May the plants will have formed and set a truss of fruit; they may then be turned out of the pots and planted against a warm wall or fence, training

them to a single stem, and pinching out all side shoots at once as they form. In ordinary seasons a fair crop of fruit is produced.

For home or market purposes, Chemin Rouge, Comet, and Dobbie's Champion are all excellent for inside or outdoors. For exhibition, Golden Jubilee, Perfection, and Duke of York are all large, of perfect form, and fine colour; but to get them extra large the fruits should be thinned freely.

Turnips.

A rich, well-worked, and friable soil is desirable for the earliest sowing at the end of March or early in April, and a sheltered site should be selected for the first sowing; and in about three weeks another sowing may be made. Early Milan and Snowball are splendid varieties for sowing up to the beginning of May; and for use from then to the end of July, Veitch's



FIG. 240.—TURNIP FLEA BEETLE.

Red Globe, Model White, and Golden Ball are all of proved merit, the last two being specially valuable for exhibition. At the end of August, Chirk Castle will be a good variety to sow to stand the winter and supply Turnip greens in early spring; while bulbs may be drawn at any time if wanted. If the Turnip-Fly, or Turnip-Flea (*Phylloptreta nemorum*) (Fig. 240) prove

troublesome, a dusting with soot early in the morning while the dew is on the plants will check this enemy and give the plants a chance to grow away from it.

Vegetable Marrows.

Being a trailing subject this vegetable is best grown on old rubbish or manure-heaps unchecked, but cutting all the Marrows immediately they are of sufficient size to use, for if one or two begin, seeding further production ceases. Seeds sown at the end of April will be early enough, as they quickly germinate and grow rapidly. When the seedlings have begun to form the first rough leaf they ought to be placed in 5in. pots, employing a compost of fibrous loam with a little decayed manure, and if necessary the plant supported with a neat stake as it grows. About the middle of May they will be ready to plant out under hand-lights, or if they are not available, planting should be postponed to the end of the month. Beyond a thorough soaking of water in dry weather, no further attention is needed. Moore's Vegetable Cream, Pen-y-byd, and Custard Marrow are the best varieties.

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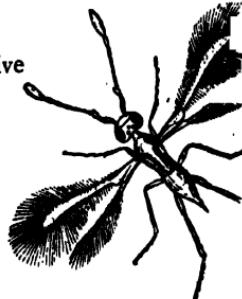
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